Textile World

MID—JULY • 1958

A McGRAW-HILL PUBLICATION

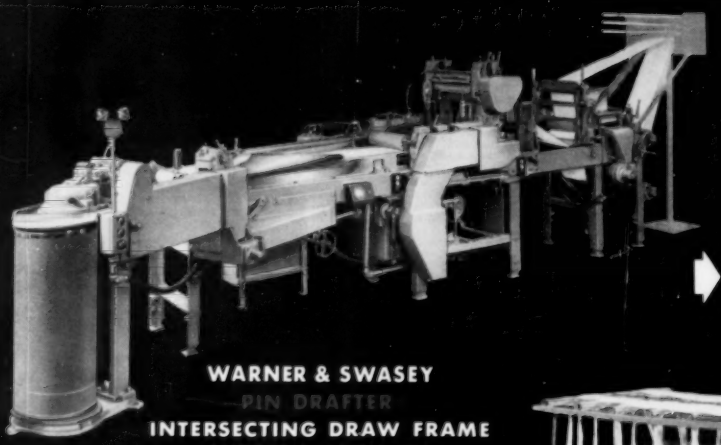
6th ANNUAL

FACT FILE

ISSUE • 1958

- MANUFACTURING AND CHEMICAL-TREATMENT DATA
- SUPPLIERS' INFORMATION SECTION
- CLASSIFIED LIST OF SUPPLIERS

PRICE 1.00



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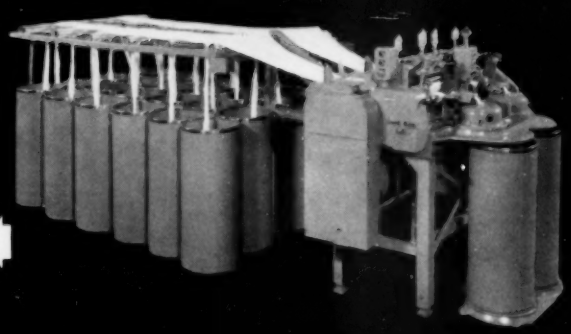

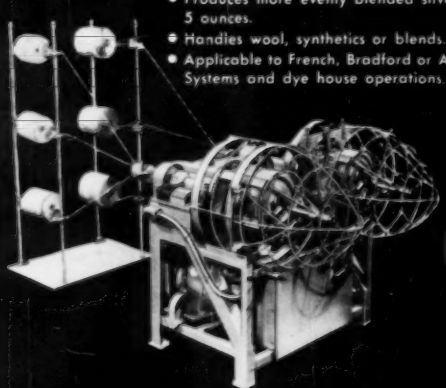

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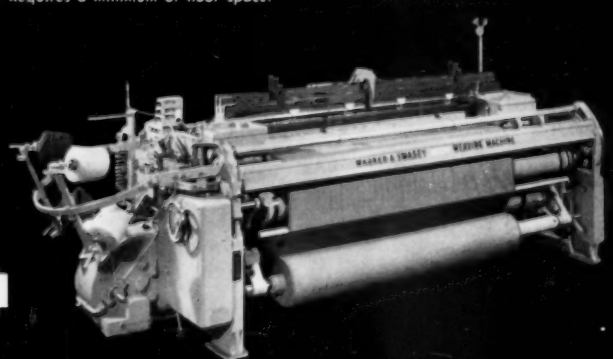

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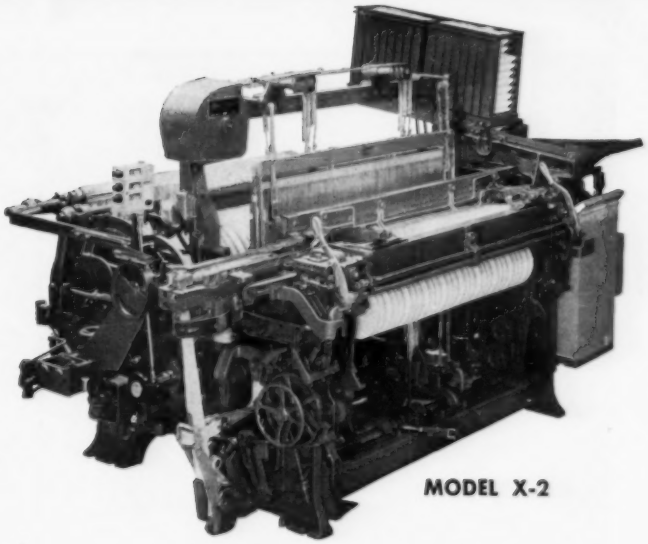

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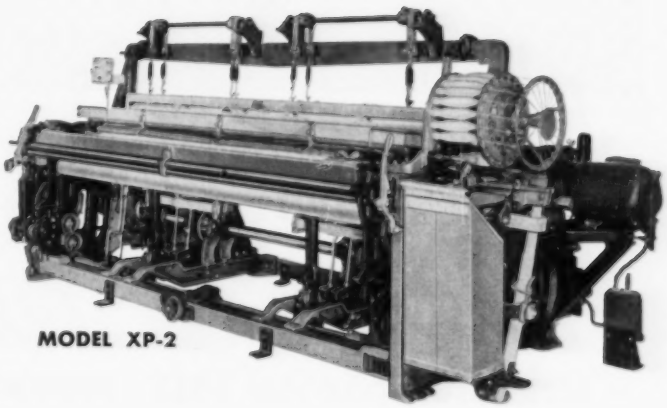
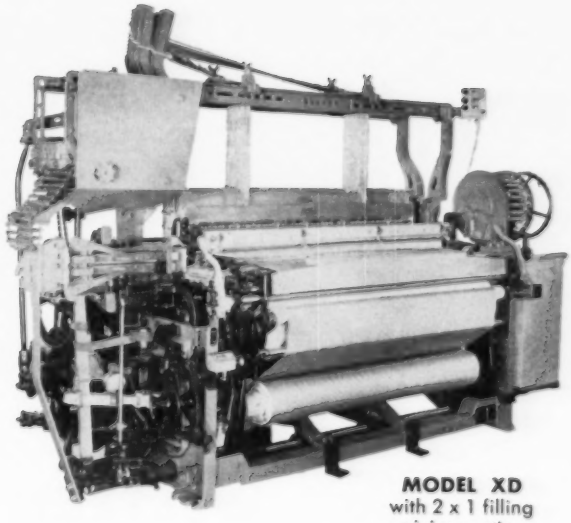


MODEL XP-2



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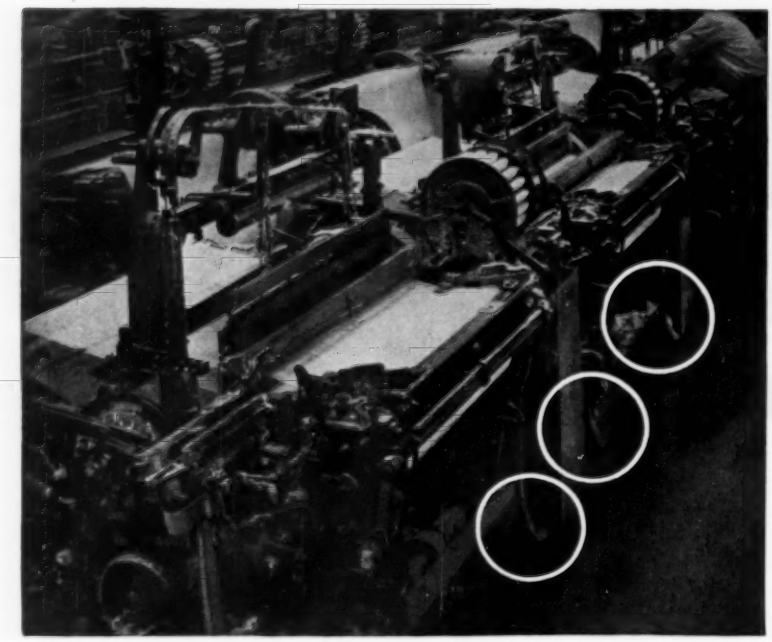

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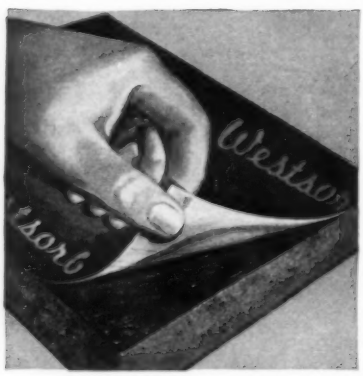

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TEXTILE WORLD'S **FACT FILE** ISSUE

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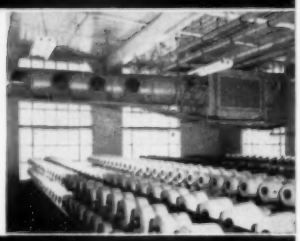

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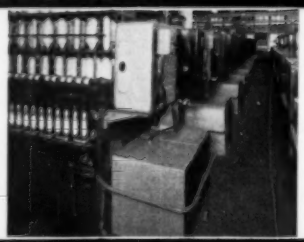
Automatically collects broken ends, lint, fly on spinning frames. More uniform suction pressure the length of frame at lower horsepower. Anodized aluminum flutes do not warp or crack. Scroll type fan discharge disperses motor alley heat. Bulletin 30A has details.

Central Heat Removal System

Takes out heat from collection units, motor alley, lowers room heat load. Can be added to existing collection systems.



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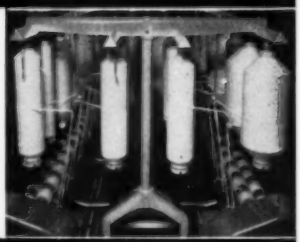
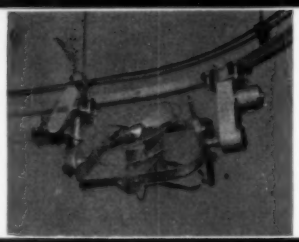


CLEANING

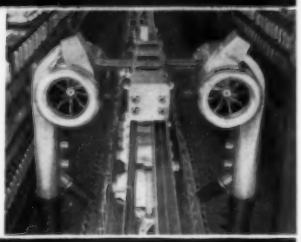
ALLRED AERO-SWEEP CLEANER

Automatic oscillating traveling cleaner self-propelled along single ceiling suspended track. Cleaner blows perpendicular to track delivering head-on air blasts for more effective overhead cleaning of ceiling, beams, lights and piping. Has patented index feature for cleaning predetermined pattern. Write for Bulletin 21A.



CROSS JET CLEANER

New cleaning principle with fixed and oscillating air discharge nozzles. The Cross Jet is self-propelled and operates on single rail creel-mounted track. Cleans entire frame, as well as walls, ceilings, beams, lights, etc.



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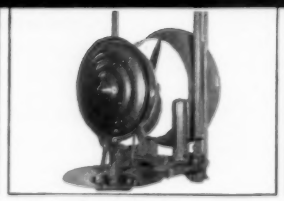

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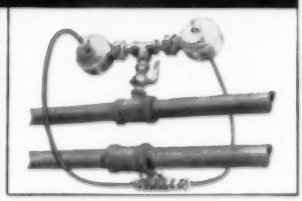

TYPE ESC ATOMIZERS

Bahnson P.M.* Plan

***Packaged Modernization** Bahnson offers complete packaged modernization in your plant with new equipment for vacuum collection, cleaning and air conditioning. Originated for your convenience and economy, the P.M. Plan combines co-ordinated engineering, group installation, one-source factory service and undivided responsibility. Result: superior quality and maximum production for you. Whether your interest be in single units or complete installations, consult Bahnson for engineering know-how and top quality equipment.

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91 of the top 100 textile manufacturing firms in the nation are users of Bahnson equipment!

Tex—A New Yarn-Numbering System

By B. L. WHITTIER, in TEXTILE WORLD

Table 1—Eight Ways To Number the Same-Size Yarn

Yarn-numbering system	Method	Yarn number
Jute (Spyndle)	Direct	0.72
Woolen (run)	Indirect	12.5
Woolen (typp)	Indirect	20
Cotton (hank)	Indirect	23.8
Worsted (hank)	Indirect	35.7
Woolen (cut) and linen (lea)	Indirect	66.66
Asbestos (cut) and glass (cut)	Indirect	200
Silk and synthetics (denier)	Direct	223.23

YARN weighing 1 lb. per 20,000 yds. can be numbered in eight different ways.

Table 2—Comparison of Tex With Equivalent Numbers

Tex number	Cotton number (approximate)	Worsted number (approximate)	Denier
5	120	..	45
10	60	..	90
15	40	60	135
20	30	45	180
25	24	36	225
30	20	30	270
35	17	25.5	315
40	15	22.5	360

TEX NUMBERS range upwards from fine to coarse, similar to the denier system.

TEX, A YARN-NUMBERING SYSTEM based on the weight in grams of a kilometer of yarn, eventually may replace the eight or more systems now in use.

Advantages of such a universal system are easy to see. A yarn that runs 20,000 yds. to 1 lb., for example, can have eight different numbers, as shown in Table 1.

When the textile industry was divided clearly into distinct segments, such as silk, cotton, and wool, each branch was not concerned to any great extent about the numbering system used by another branch. But the distinction between different branches of the industry has been diminishing as the use of man-made fibers and blends of all fibers and yarns has increased.

A mill producing sales yarn may supply cotton mills, woolen or worsted mills, or mills weaving silk and synthetics fabrics. A cotton or woolen mill may produce yarns designated by one system in its spinning room and weave them into a fabric containing filament or spun yarns with numbers based on a different system.

These complications are well known, and the situation will become more complex as the trend toward blends increases.

What Is the Tex System?

The Tex unit is the weight in grams of one kilometer of fiber, filament, or yarn. Linear density, expressed in terms of weight per length, is similar to the denier unit and the Grex unit. A major difference is the use of 1,000 m. instead of 9,000 or 10,000 m. which results in reduction of the number that expresses the linear density of a yarn.

This figure means a closer relationship between cotton and worsted yarn numbers in the medium range of textile yarns. In Table 2, the comparison of Tex numbers with equivalent numbers illustrates this relationship within a wide range of spun yarns.

Many ideas have been suggested for a universal yarn-numbering system. Consensus is that a direct system is desirable because the number increases as the linear density increases. If two strands are twisted together, the number of the resultant yarn is equal to the sum of the number of each strand even if the strand is of different linear density. For example, two-ply yarn made of 10 Tex and 20 Tex combined equals 30 Tex.

Table 3—Conversion of Tex to Cotton Numbers

Tex number	Yards per pound	Cotton number
10	49,605 ÷ 840 =	59
20	24,802 ÷ 840 =	29.5
30	16,535 ÷ 840 =	19.7
40	12,401 ÷ 840 =	14.75

CONVERSION of Tex to cotton numbers is made by dividing yards per pound by 840 (yards per hank).

Fiber Moisture Regain at Various Conditions

Here is a table showing the moisture regain of seven fibers at various temperatures and relative humidities:

Temperature (F.°)	Relative humidity (%)	Moisture Regain (%) Acetate	Cotton	Cupra rayon	Nylon	Silk	Viscose rayon	Wool
75	10	0.8	2.4	....	1.1	3.2	3.9	4.0
75	20	1.7	3.6	5.4	...	5.4	5.7	7.1
75	30	2.4	4.3	6.9	1.7	6.7	7.4	9.4
75	40	3.2	5.0	8.5	2.3	7.8	8.8	11.0
75	45	3.6	5.3	9.2	...	8.4	9.7	11.8
75	50	4.2	5.7	10.0	2.8	8.8	10.4	12.6
75	55	4.7	6.3	10.8	...	9.4	11.3	13.4
75	60	5.2	6.7	11.7	3.4	9.9	12.2	14.2
75	65	5.9	7.3	12.4	...	10.5	13.1	15.0
75	70	6.7	7.9	13.4	4.1	11.4	14.3	16.0
75	80	8.5	9.9	16.0	5.0	14.0	17.1	18.6
75	90	11.3	13.6	20.3	5.7	18.4	21.9	23.2
70	65	6.0	8.5	11.0	4.5	...	11.0	16.0

Statistical Quality Control of Textile Products

QUALITY OF PRODUCT depends on raw materials, good design, workmanship, and finally upon uniformity of materials and processing methods.

To maintain an unbroken chain of quality control, it is necessary to establish limits within which the product must fall at any particular stage of manufacture to be acceptable for the following step.

Test data accumulated over a period of time will indicate where trouble may be looked for—in raw materials or previous processing. Processing troubles may be a result of machine misfunction or poor operating techniques.

Keep Statistics Simple

To be useful in an average mill, statistical data relating to tests, checking routines, and the like must be kept simple. Among the important aids to quality control are:

Control charts that show the acceptable limits of variation in the product at any given stage of manufacture.

Ready-made tables that indicate the amount and extent of sampling needed at different stages of manufacture.

Formulas and tables compiled on an industry-wide basis that show what variations can be expected or tolerated in a standard product, which help to identify, isolate, and correct individual process conditions.

Techniques for tracing the flow of variations from process to process that can be used to advantage with the formulas and tables mentioned above.

At the departmental level, charts that outline the principal steps in machine operation as related to product uniformity help establish routine checks during the operative cycle.

An example of this type of chart that might be posted by a tenter frame is given below.

Quality-Control Action

For Tenter Frames

Start-up

1. Inspect thoroughly the first 300 yds. of cloth in each run.

2. Do not run any cloth considered unsatisfactory. If cloth is of borderline quality, watch it closely for possible deterioration of faults.

3. Cut a 10-in. patch from each lot prior to running. This patch will be used for future comparison.

Running of Lot

Watch the cloth closely, as it runs, checking for the following:

Narrow, scrimps, crooked, wet: Adjust machine immediately.

Narrow laps: Mark faulty links for repair by plant shop.

Double edge: Correct immediately. Lint, grease, dirt, streaks, stains, mark-off: Correct faults in feed or delivery end. Hold aside any lot with these faults prior to feeding.

Uneven or off-shade: Hold aside any lot with these faults prior to feeding.

Periodic checks

1. Pull out all defective yardages found during running of lot for inspection by supervisor (every 20 mins.).

2. Check temperature of starch every 20 mins. Watch for dirt. Inspect cloth coming off truck.

3. On plain shades, make shade comparisons every 30 mins. Stop running any lots where marked differences develop, until supervisory decision is obtained.

Definite instructions of this type help maintain uniformity, reduce seconds, and contribute to a smoother flow of goods through process.

Similar applications include itemization of supervisory authority and responsibility that defines the job and establishes check points for product quality, machine efficiency, and miscellaneous factors.

Statistical quality control is an intangible element that is readily accepted by management when product improvement results from its use.

From a paper delivered by Dr. L. H. Hance before AATT.

Asbestos Fabrics Cover a Wide Range

Asbestos Cloth Constructions

Asbestos content (%)	Ends per inch		Breaking strength (lbs.)		Weight (lbs. per sq. yd.)	Weave
	Warp	Filling	Warp	Filling		
80	18	9	100	45	2.25	Plain
80	19	10	80	40	1.4	Plain
80	27	9	125	45	2.4	One-up, two-down twill
90	18	9	100	45	2.25	Plain
90	27	9	150	45	2.4	One-up, two-down twill
95	19	10	85	40	1.4	Plain
95	27	9	150	45	2.4	One-up, two-down twill

Asbestos textiles are divided into six standard grades, which are based on the percentage of asbestos in the product. Commercial Grade has 75 to 80% asbestos, Underwriter's Grade has 80 to 85%, Grade A has 85 to 90%, Grade AA has 90 to 95%, Grade AAA has 95 to 99%, and Grade AAAA has 99 to 100% asbestos.

Asbestos cloth ranges from 8 to 25 oz. per sq. yd. The thickness is 0.012 to 0.049 in. Several constructions are given in the accompanying table.

Some asbestos finishes consist of coating or impregnating synthetic resins in the fabric for water repellency and for sealing against heat loss.

Some asbestos cloths are dyed for drapes and for identifying electrical insulating wire. Asbestos tapestries are usually printed.

Asbestos fibers are difficult to dye. The most successful dye is aniline.

Control Manufacturing Operations With Tabulated Data

By E. H. HELLIWELL, in TEXTILE WORLD

The problem of compiling complete machinery, operating, and cost data and keeping this information up to date has proved a source of concern to many superintendents, overseers, and cost departments. The plant manager of a cotton mill says that he avoids duplication of records, prevents many errors and secures essential information more readily by dividing all departmental data into three general classifications:

1. **Installation data** contain all the construction and mechanical details of each type of machine. This information is obtained when the machine is installed and is considered a permanent record. Changes are seldom made in the original record. Any minor or major changes are noted on the original data sheet to keep the records correct. Very little of this installation detail is required for operational control or cost finding.

2. **Cost-data figures** are kept entirely separate. Current hourly piece rates are a big factor in unit costs; changes in pay rates cause changes in operating costs without any change in processing procedure. The complete separation of cost data from other essential data avoids many changes in departmental records and indicates more clearly the real cause of variation in departmental costs.

3. **Operational data** are the third classification and the most important in placing the responsibility for department production, quality, and costs. If standard speeds, settings, adjustments, cleaning methods, waste removal, and other conditions are consistently maintained, the amount, quality, and cost of production should automatically take care of themselves. This method of classification permits the overseer to concentrate on the details that really count.

Planning Is Easier

Duplicate copies of each department's installation, cost, and operational data are furnished to each departmental overseer. Data changes must be jointly approved and entered on each data sheet. When changes are made in the standard organization, the reason for these changes must be plainly stated. Thus, planning is easier.

How to select and list important operational details in the carding department is shown in the accompanying tables. The same principles can be applied to other departments.

Installation data are not included because of their fixed nature. Cost data are also omitted because changes in pay rates are beyond the control of the department head. Cost figures, when required, can easily be obtained from the production-per-unit figure in the operational data as related to pay rates.

The cost data furnished each overseer in this plant include only his actual departmental costs. The prorated plant overhead charges are omitted to give a clearer comparison of the departmental operating costs.

Operational Data for Carding (Example)

Cards available	228
Standard speeds	
Cylinder (rpm.)	165
Lickerin (rpm.)	457
Flats (ins. per min.)	3
Doffer 22-T gear (rpm.)	10.2
Production (lbs. per hr.)	11
Efficiency (%)	90
Lap weight per yd. (oz.)	12.5
Sliver weight per yd. (grains)	52
Actual draft (6% waste)	115
Draft constant	1,525
Draft gear	14
Net weight of lap (lbs.)	50.5
Doffing time (hrs.)	4.5
Net weight of sliver in full 12-in. can (lbs.)	11
Standard waste (%)	6
Card settings (ins.)	
Feed plate to lickerin	0.010
Lickerin to cylinder	0.007
Flats to cylinder	0.010
Doffer to cylinder	0.007
Top knife to lickerin	0.022
Bottom knife to lickerin	0.017
Angle of mote knives (degrees)	15.0
Lickerin blank to shroud	0.029
Lickerin screen, front	0.017
Lickerin screen, back	3/16
Cylinder screen to cylinder, front	3/16
Cylinder screen to cylinder, middle	0.058
Cylinder screen to cylinder, back	0.029
Back plate to cylinder, top	0.029
Back plate to cylinder, bottom	0.029
Front plate to cylinder, top	0.029
Front plate to cylinder, bottom	0.034
Doffer comb to doffer	0.022
Flat comb to flats	0.015

From the standard production per hour and the standard payroll allowance for each process, a standard cost per unit can be established. Actual production and payroll for each process are then compared with the standard costs. Thus the overseer can quickly and easily see exactly where his department stands in relation to standard operation.

How To Spot Periodic Variations

By E. J. BERNET, G. Z. DUNN, JR., and W. C. HARRIS, in TEXTILE WORLD

There are certain settings, such as pen average, pen sensitivity, chart speed, and material speed, which can be used on the Brush uniformity analyzer to assist in the search for periodic variations. The particular setting to use in searching for periodicities is generally dependent upon the distance between the expected periodic variations.

For closely spaced periods (3 ins. to 10 ins.) in the material, a fast chart speed (25 mm. per sec. to 125 mm. per sec.) and the pen average at position 0 or 1 are generally used. A slow chart speed (5 mm. per sec.) and the pen average at position 2 or 3 will indicate longer periodic variations. The pen sensitivity control is usually used to increase the amplitude of the variations on the chart after the pen average and chart speed have been selected.

There are many mechanical faults in fiber processing that cause periodic variations. An eccentric roll or gear on a drawing, roving, or spinning frame can cause a wavy pattern of thick and thin places in the stock.

A pattern formed in the material by a flat spot on the top roll is dependent upon the roll position on that particular frame. A flat spot in the back-roll position has very little effect, but in the third-roll position on a four-roll frame it causes a thin place directly followed by a thick place. A defective front roll causes periodic thick places in the material.

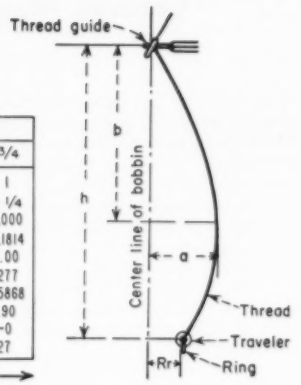
Defective bottom rolls on the drawing frame affect the sliver differently, depending upon the position on the frame. Defective drafting rolls used primarily as delivery rolls have a greater effect on the resulting sliver than defective rolls used as feed rolls do.

Most of these mechanical faults have a particular pattern that can be distinguished by proper use of the uniformity analyzer.

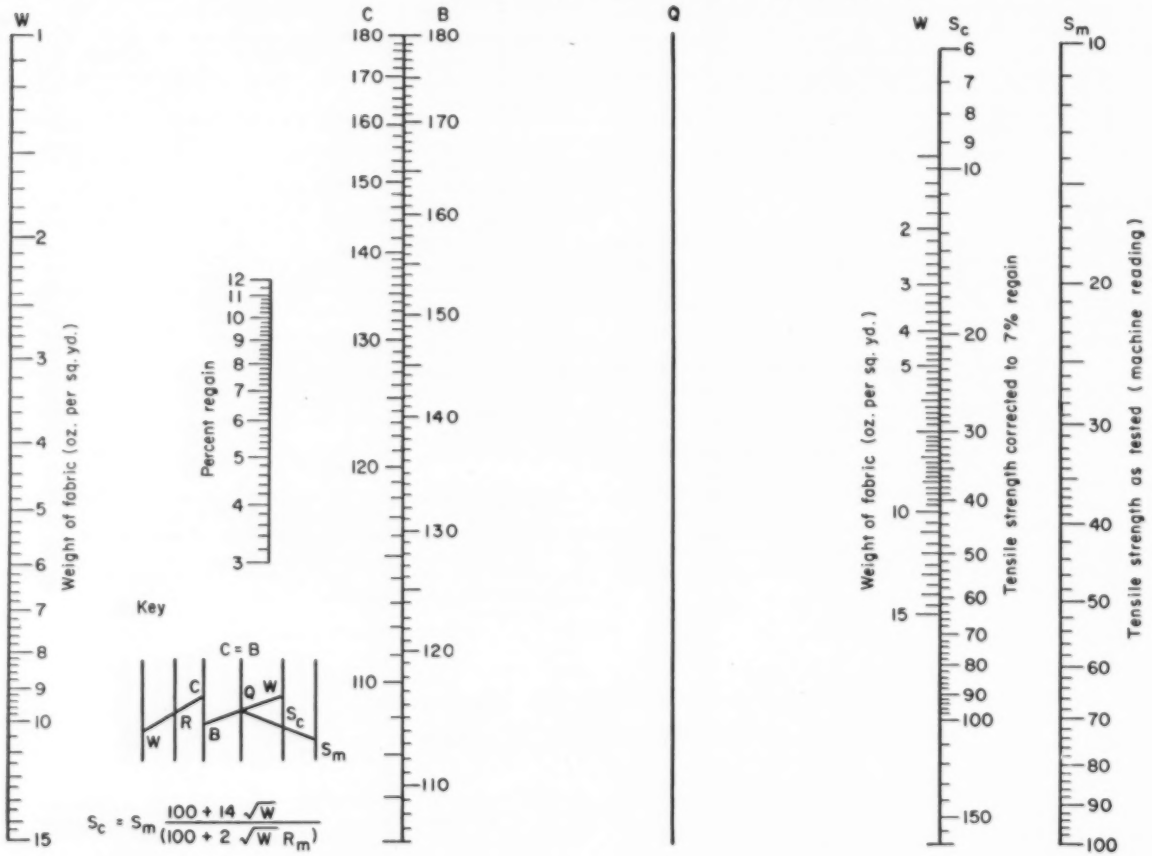
Ring Size, Traveler Speed, and Tension

	Ring diameter in inches									
	1 3/4	1 3/4	1 3/4	1 7/8	1 7/8	1 7/8	2	2 3/16	2 3/8	2 3/4
Bobbin dia. in inches	1/2	1/2	1/2	1/2	1/2	1/2	5/8	3/4	7/8	1
Gauge	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	4	4 1/4
Spindle speed	9,000	10,000	11,000	9,000	10,000	11,000	11,000	10,000	9,000	8,000
"a" in meters	.1621	.1462	.1328	.1621	.1462	.1328	.1328	.1462	.1621	.1814
"h" in inches	10.80	9.73	8.84	10.60	9.58	8.71	8.58	9.25	10.37	11.00
"b" in meters	.273	.247	.224	.270	.243	.221	.218	.235	.264	.277
Wt. of trav. in grams	.07350	.06229	.05243	.06720	.05587	.04702	.04756	.05360	.06086	.05868
Approx. wt. of trav. in grains	1.20	1.00	0.80	1.10	0.85	0.75	0.75	0.85	0.95	0.90
Approx. number of trav.	1 1/2	1	2-0	1 1/2	1 1/2-0	3-0	3-0	1 1/2-0	1/2	1-0
Yarn tension in grams	27	27	27	27	27	27	27	27	27	27

Relationship between dimensions of yarn balloon used in table →



To Correct Fabric Strength to 7% Regain



It is often necessary to make routine strength tests without waiting for the laboratory to come to the proper conditions.

The accompanying nomograph has been constructed to facilitate the correction of strengths to 7% regain. It is a simplification of a nomograph by Professor Schwartz. Since all corrections have been made to 7%, it has been possible to dispense with several scales. The range of variables has been adjusted to give scales easy to read over the range of conditions ordinarily encountered in testing light- and medium-weight fabrics. To compare the strengths of two fabrics tested under different conditions, it is only necessary to correct both to 7%.

As an example, take a 2.15-oz. fabric having a breaking strength of 34.6 lbs. at 5.7% regain:

1. The fabric weight, 2.15 oz., is located on the left-hand scale, and a line is drawn through the per cent regain, 5.7%, to the C scale, where a value of 116.5 is obtained.

2. This value, 116.5, is then located on the B scale and joined again with the second fabric weight scale at 2.15 oz. The intersection of this line with the Q scale is marked.

3. A line is drawn connecting this turning point on the Q scale with the breaking strength, 34.6 lbs. on scale S_m. The corrected strength, 35.2 lbs., is read on the S_c scale.

12 Requirements for Good Winding

By ERNEST R. BECKNER, in TEXTILE WORLD

1. Good filling yarn, properly treated and conditioned
2. Adequate stock of repair parts and good maintenance
3. Smooth, straight quills with uniform dimensions
4. A good inspection procedure
5. Temperature and humidity control
6. Conscientious operators
7. Adequate yarn-supply service
8. Proper workloads
9. Accurate and fair piecework rates
10. Adequate fixing by skilled and properly paid fixers
11. A good system of reports, not too cumbersome
12. Good supervision

Aligning Lay Ends On C&K W-3 Looms

By EUGENE P. SCHREMP, in TEXTILE WORLD

Use a straightedge often to check loom-lay alignment. On Crompton & Knowles W-3 looms, align the shuttle boxes on both ends of the loom so that they're pitched inward and downward $\frac{3}{32}$ in. for each 18 ins. of length. The reed line is $\frac{3}{32}$ in. back of the rear edge of the race plate; therefore, when you're checking the pitch of a lay end, add $\frac{3}{32}$ in. to the gap between the back edge of the straightedge and the rear edge of the race plate.

To check a lay end for the correct pitch, extend a long straightedge the full length of the shuttle box and press it firmly against the back of the box. A 36-in. straightedge should extend $\frac{1}{16}$ in. from the back edge of the race plate, a 54-in. straightedge should extend $\frac{3}{32}$ in., and a 72-in. straightedge should extend $\frac{1}{8}$ in.

The downward pitch is checked much the same way and by the same dimensions.

Spinning Twist Calculator

Yarn number	Square root	Twist factors						
		3.00	3.25	3.50	3.75	4.00	4.50	5.00
1	1.00	3.00	3.25	3.50	3.75	4.00	4.50	5.00
2	1.414	4.24	4.60	4.95	5.30	5.66	6.36	7.07
3	1.732	5.20	5.63	6.06	6.50	6.93	7.79	8.66
4	2.00	6.00	6.50	7.00	7.50	8.00	9.00	10.0
5	2.236	6.71	7.27	7.83	8.39	8.94	10.1	11.2
6	2.449	7.35	7.96	8.57	9.19	9.80	11.1	12.2
7	2.645	7.94	8.60	9.26	9.92	10.6	11.9	13.2
8	2.828	8.49	9.19	9.90	10.6	11.3	12.7	14.1
9	3.00	9.00	9.75	10.5	11.2	12.0	13.5	15.0
10	3.162	9.49	10.3	11.1	11.9	12.6	14.2	15.8
11	3.316	9.95	10.8	11.6	12.4	13.3	14.9	16.6
12	3.464	10.4	11.3	12.1	13.0	13.9	15.6	17.3
13	3.605	10.8	11.7	12.6	13.5	14.4	16.2	18.0
14	3.741	11.2	12.2	13.1	14.0	15.0	16.8	18.7
15	3.872	11.6	12.6	13.6	14.5	15.5	17.4	19.4
16	4.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0
17	4.123	12.4	13.4	14.4	15.5	16.5	18.5	20.6
18	4.242	12.7	13.8	14.8	15.9	17.0	19.1	21.2
19	4.358	13.1	14.2	15.3	16.3	17.4	19.6	21.8
20	4.472	13.4	14.5	15.7	16.8	17.9	20.1	22.4
21	4.582	13.7	14.9	16.0	17.2	18.3	20.6	22.9
22	4.69	14.1	15.2	16.4	17.6	18.8	21.1	23.5
23	4.795	14.4	15.6	16.8	18.0	19.2	21.6	24.0
24	4.898	14.7	15.9	17.1	18.4	19.6	22.0	24.5
25	5.0	15.0	16.2	17.5	18.7	20.0	22.5	25.0
26	5.099	15.3	16.6	17.8	19.1	20.4	22.9	25.5
27	5.196	15.6	16.9	18.2	19.5	20.8	23.4	26.0
28	5.291	15.9	17.2	18.5	19.8	21.2	23.8	26.5
29	5.385	16.2	17.5	18.8	20.3	21.5	24.2	26.9
30	5.477	16.4	17.8	19.2	20.5	21.9	24.6	27.4
31	5.567	16.7	18.1	19.5	20.9	22.3	25.1	27.8
32	5.656	17.0	18.4	19.8	21.2	22.6	25.5	28.3
33	5.744	17.2	18.7	20.1	21.5	23.0	25.8	28.7
34	5.830	17.5	19.0	20.4	21.9	23.3	26.2	29.2
35	5.916	17.7	19.2	20.7	22.2	23.7	26.6	29.6
36	6.0	18.0	19.5	21.0	22.5	24.0	27.0	30.0
37	6.082	18.2	19.8	21.3	22.8	24.3	27.4	30.4
38	6.164	18.5	20.0	21.6	23.1	24.7	27.7	30.8
39	6.245	18.7	20.3	21.9	23.4	25.0	28.1	31.2
40	6.324	19.0	20.6	22.1	23.7	25.3	28.5	31.6
41	6.403	19.2	20.8	22.4	24.0	25.6	28.8	32.0
42	6.48	19.4	21.1	22.7	24.3	25.9	29.2	32.4
43	6.557	19.7	21.3	23.0	24.6	26.2	29.5	32.8
44	6.633	19.9	21.6	23.2	24.9	26.5	29.8	33.2
45	6.708	20.1	21.8	23.5	25.2	26.8	30.2	33.5
46	6.782	20.3	22.0	23.7	25.4	27.1	30.5	33.9
47	6.855	20.6	22.3	24.0	25.7	27.4	30.9	34.3
48	6.928	20.8	22.5	24.2	26.0	27.7	31.2	34.6
49	7.0	21.0	22.7	24.5	26.2	28.0	31.5	35.0
50	7.071	21.2	23.0	24.7	26.5	28.3	31.8	35.4
60	7.745	23.2	25.2	27.1	29.0	31.0	34.9	38.7
70	8.366	25.1	27.2	29.3	31.4	33.5	37.6	41.8
80	8.944	26.8	29.1	31.3	33.5	35.8	40.2	44.7
90	9.486	28.5	30.8	33.2	35.6	37.9	42.7	47.4
100	10.0	30.0	32.5	35.0	37.5	40.0	45.0	50.0

Courtesy Thomas D. Toy & Co.

Slashing Filament Yarns

From TEXTILE WORLD

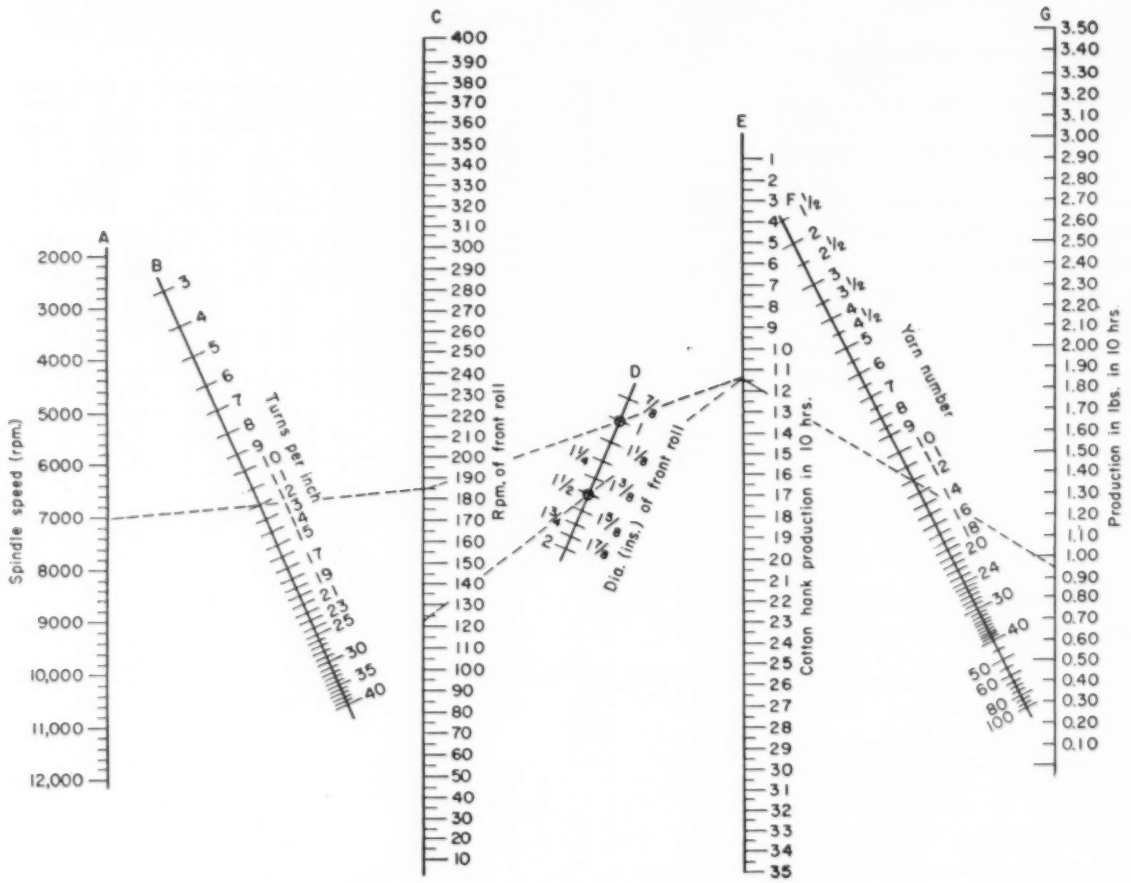
The following size formula and cylinder temperatures result in well-slashed synthetic filament yarns of various types. With this setup, delicate yarns are protected.

A 100-gal. mix for a warp consists of 58 lbs. of Evalan, 12 lbs. of Colloids 216, and 6 lbs. of ammonia. The temperature of the size box on this formula is 120° F. The slasher cylinders are not covered with cloth. However, on a gelatin mix, the first three slasher cylinders are covered with cheesecloth.

Both slashers should have identical single quetsches. The bottom roll is stainless steel; the top roll is rubber-covered.

The cylinder temperatures on the nine-cylinder slasher beginning at the size box are No. 1 100° F., No. 2 170° F., No. 3 185° F., No. 4 190° F., No. 5 200° F., No. 6 180° F., No. 7 170° F., No. 8 170° F., and No. 9 100° F.

To Determine Roll Speed and Production



To determine front-roll speed required to insert a desired twist per inch at a given spindle speed, lay a straightedge through the proper points on Scales *A* and *B* and read the roll speed on Scale *C*. The reading obtained is for a 1-in.-dia. roll.

Production in cotton hanks for 10 hrs. is found by a straight line from Scale *C* to Scale *E*, passing through the roll diameter on *D*. If the front-roll speed was found from the first three scales of the chart, the 1-in. roll diameter must be used here.

When a roll diameter is other than 1 in., the roll speed is found by laying a straightedge from *E* back through the actual roll diameter and reading the roll speed on *C*.

Production in pounds per spindle in 10 hrs. is found on Scale *G* by a straight line from the hank production on Scale *E* through yarn size on *F*.

All production figures thus obtained are 100%, and stoppage allowance must be included in finding actual values.

Dotted lines illustrate the use of the chart in detemining roll speed and production.

Causes of Misplaced Filling Yarn

The most common type of misplaced filling yarn is a mispick. A mispick is an end of filling yarn placed in the wrong shed of the warp and is usually caused when the yarn breaks and the weaver restarts the loom without matching the filling. A somewhat similar defect is caused when an end of filling yarn is missing from the fabric and is generally known as a broken pick. Both mispicks and broken picks may extend from selvage to selvage, or they may be only a few inches long.

Mispicks are also made when the shuttle is thrown from the warp shed, is trapped by the shuttle guard and deflector, and enters the opposite shuttle box with the loom still in operation. In this instance, a trailing end of yarn is left outside the shed, and a mispick is made in the cloth. These defects can be caused by several things. Among the causes are:

1. Picker not parallel to the lay
2. Lay end or shuttle race not aligned properly
3. Harnesses not set or timed correctly
4. Warp shed too small
5. Broken warp end or foreign matter obstructing the shed
6. Shuttle worn out
7. Crooked picker stick
8. Picking motion not timed correctly

Yards of Cloth per Loom per Hour

(100% production)

Picks per inch	Picks per minute																					
	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205
20	8.33	8.75	9.17	9.58	10.00	10.42	10.83	11.25	11.67	12.08	12.50	12.92	13.33	13.75	14.17	14.58	15.00	15.42	15.83	16.25	16.67	17.08
22	7.58	7.95	8.33	8.71	9.09	9.47	9.85	10.23	10.61	10.98	11.36	11.74	12.12	12.50	12.88	13.26	13.64	14.02	14.39	14.77	15.15	15.53
24	6.94	7.29	7.64	7.99	8.33	8.68	9.03	9.37	9.72	10.07	10.42	10.76	11.11	11.46	11.81	12.15	12.50	12.85	13.19	13.54	13.89	14.24
26	6.41	6.73	7.05	7.37	7.69	8.01	8.33	8.65	8.97	9.29	9.62	9.94	10.26	10.58	10.90	11.22	11.54	11.86	12.18	12.50	12.82	13.14
28	5.95	6.25	6.55	6.85	7.14	7.44	7.74	8.04	8.33	8.63	8.93	9.23	9.52	9.82	10.12	10.42	10.71	11.01	11.31	11.61	11.90	12.20
30	5.56	5.83	6.11	6.39	6.67	6.94	7.22	7.50	7.78	8.06	8.33	8.61	8.89	9.17	9.44	9.72	10.00	10.28	10.55	10.83	11.11	11.39
32	5.21	5.47	5.73	5.99	6.25	6.51	6.77	7.03	7.29	7.55	7.81	8.07	8.33	8.59	8.85	9.11	9.37	9.64	9.90	10.16	10.42	10.68
34	4.90	5.15	5.39	5.64	5.88	6.13	6.37	6.62	6.86	7.11	7.35	7.60	7.84	8.09	8.33	8.58	8.82	9.07	9.31	9.56	9.80	10.05
36	4.63	4.86	5.09	5.32	5.56	5.79	6.02	6.25	6.48	6.71	6.94	7.18	7.41	7.64	7.87	8.10	8.33	8.56	8.80	9.03	9.26	9.49
38	4.39	4.61	4.82	5.04	5.26	5.48	5.70	5.92	6.14	6.36	6.58	6.80	7.02	7.24	7.46	7.68	7.89	8.11	8.33	8.55	8.77	8.99
40	4.17	4.37	4.58	4.79	5.00	5.21	5.42	5.63	5.83	6.04	6.25	6.46	6.67	6.87	7.08	7.29	7.50	7.71	7.92	8.13	8.33	8.54
42	3.97	4.17	4.37	4.56	4.76	4.96	5.16	5.36	5.55	5.75	5.95	6.15	6.35	6.55	6.75	6.94	7.14	7.34	7.54	7.74	7.94	8.13
44	3.79	3.98	4.17	4.36	4.55	4.73	4.92	5.11	5.30	5.49	5.68	5.87	6.06	6.25	6.44	6.63	6.82	7.01	7.20	7.39	7.58	7.77
46	3.62	3.80	3.99	4.17	4.35	4.53	4.71	4.89	5.07	5.25	5.43	5.62	5.80	5.98	6.16	6.34	6.52	6.70	6.88	7.07	7.25	7.43
48	3.47	3.65	3.82	3.99	4.17	4.34	4.51	4.69	4.86	5.03	5.21	5.38	5.56	5.73	5.90	6.08	6.25	6.42	6.60	6.77	6.94	7.12
50	3.33	3.50	3.67	3.83	4.00	4.17	4.33	4.50	4.67	4.83	5.00	5.17	5.33	5.50	5.67	5.83	6.00	6.17	6.33	6.50	6.67	6.83
52	3.21	3.37	3.53	3.69	3.85	4.01	4.17	4.33	4.49	4.65	4.81	4.97	5.13	5.29	5.45	5.61	5.77	5.93	6.09	6.25	6.41	6.57
54	3.09	3.24	3.40	3.55	3.70	3.86	4.01	4.17	4.32	4.48	4.63	4.78	4.94	5.09	5.25	5.40	5.56	5.71	5.86	6.02	6.17	6.33
56	2.98	3.13	3.27	3.42	3.57	3.72	3.87	4.02	4.17	4.32	4.46	4.61	4.76	4.91	5.06	5.21	5.36	5.51	5.65	5.80	5.95	6.10
58	2.87	3.02	3.16	3.30	3.45	3.59	3.74	3.88	4.02	4.17	4.31	4.45	4.60	4.74	4.88	5.03	5.17	5.32	5.46	5.60	5.75	5.89
60	2.78	2.92	3.06	3.19	3.33	3.47	3.61	3.75	3.89	4.03	4.17	4.31	4.44	4.58	4.72	4.86	5.00	5.14	5.28	5.42	5.56	5.69
62	2.69	2.82	2.96	3.09	3.23	3.36	3.49	3.63	3.76	3.90	4.03	4.17	4.30	4.44	4.57	4.70	4.84	4.97	5.11	5.24	5.38	5.51
64	2.60	2.73	2.86	2.99	3.13	3.26	3.39	3.52	3.65	3.78	3.91	4.04	4.17	4.30	4.43	4.56	4.69	4.82	4.95	5.08	5.21	5.34
66	2.53	2.65	2.78	2.90	3.03	3.16	3.28	3.41	3.54	3.66	3.79	3.91	4.04	4.17	4.29	4.42	4.55	4.67	4.80	4.92	5.05	5.18
68	2.45	2.57	2.70	2.82	2.94	3.06	3.19	3.31	3.43	3.55	3.68	3.80	3.92	4.04	4.17	4.29	4.41	4.53	4.66	4.78	4.90	5.02
70	2.38	2.50	2.62	2.74	2.86	2.98	3.10	3.21	3.33	3.45	3.57	3.69	3.81	3.93	4.05	4.17	4.29	4.40	4.52	4.64	4.76	4.88
72	2.31	2.43	2.55	2.66	2.78	2.89	3.01	3.13	3.24	3.36	3.47	3.59	3.70	3.82	3.94	4.05	4.17	4.28	4.40	4.51	4.63	4.75
74	2.25	2.36	2.48	2.59	2.70	2.82	2.93	3.04	3.15	3.27	3.38	3.49	3.60	3.72	3.83	3.94	4.05	4.17	4.28	4.39	4.50	4.62
76	2.19	2.30	2.41	2.52	2.63	2.74	2.85	2.96	3.07	3.18	3.29	3.40	3.51	3.62	3.73	3.84	3.95	4.06	4.17	4.28	4.39	4.50
78	2.14	2.24	2.35	2.46	2.56	2.67	2.78	2.88	2.99	3.10	3.21	3.31	3.42	3.53	3.63	3.74	3.85	3.95	4.06	4.17	4.27	4.38
80	2.08	2.19	2.29	2.40	2.50	2.60	2.71	2.81	2.92	3.02	3.13	3.23	3.33	3.44	3.54	3.65	3.75	3.85	3.96	4.06	4.17	4.27
82	2.03	2.13	2.24	2.34	2.44	2.54	2.64	2.74	2.85	2.95	3.05	3.15	3.25	3.35	3.46	3.56	3.66	3.76	3.86	3.96	4.07	4.17
84	1.98	2.08	2.18	2.28	2.38	2.48	2.58	2.68	2.78	2.88	2.98	3.08	3.17	3.27	3.37	3.47	3.57	3.66	3.77	3.87	3.97	4.07
86	1.94	2.03	2.13	2.23	2.33	2.42	2.52	2.62	2.71	2.81	2.91	3.00	3.10	3.20	3.29	3.39	3.49	3.58	3.68	3.78	3.88	3.97
88	1.89	1.99	2.08	2.18	2.27	2.37	2.46	2.56	2.65	2.75	2.84	2.94	3.03	3.13	3.22	3.31	3.41	3.50	3.60	3.69	3.79	3.88
90	1.85	1.94	2.04	2.13	2.22	2.31	2.41	2.50	2.59	2.69	2.78	2.87	2.96	3.06	3.15	3.24	3.33	3.43	3.52	3.61	3.70	3.80
92	1.81	1.90	1.99	2.08	2.17	2.26	2.36	2.45	2.54	2.63	2.72	2.81	2.90	2.99	3.08	3.17	3.26	3.35	3.44	3.53	3.62	3.71
94	1.77	1.86	1.95	2.04	2.13	2.22	2.30	2.39	2.48	2.57	2.66	2.75	2.84	2.93	3.01	3.10	3.19	3.28	3.37	3.46	3.55	3.63
96	1.74	1.82	1.91	2.00	2.08	2.17	2.26	2.34	2.43	2.52	2.60	2.69	2.78	2.86	2.95	3.04	3.13	3.21	3.30	3.39	3.47	3.56
98	1.70	1.79	1.87	1.96	2.04	2.13	2.21	2.30	2.38	2.47	2.55	2.64	2.72	2.81	2.89	2.98	3.06	3.15	3.23	3.32	3.40	3.49
100	1.67	1.75	1.83	1.92	2.00	2.08	2.17	2.25	2.33	2.42	2.50	2.58	2.67	2.75	2.83	2.92	3.00	3.08	3.17	3.25	3.33	3.44
102	1.63	1.72	1.80	1.88	1.96	2.04	2.12	2.21	2.29	2.37	2.45	2.53	2.61	2.70	2.78	2.86	2.94	3.02	3.10	3.19	3.27	3.35
104	1.60	1.68	1.76	1.84	1.92	2.00	2.08	2.16	2.24	2.32	2.40	2.48	2.56	2.64	2.72	2.80	2.88	2.96	3.04	3.13	3.21	3.29
106	1.57	1.65	1.73	1.81	1.89	1.97	2.04	2.12	2.20	2.28	2.36	2.44	2.52	2.59	2.67	2.75	2.83	2.91	2.99	3.07	3.14	3.22
108	1.54	1.62	1.70	1.77	1.85	1.93	2.01	2.08	2.16	2.24	2.31	2.39	2.47	2.55	2.62	2.70	2.78	2.85	2.93	3.01	3.09	3.16
110	1.52	1.59	1.67	1.74	1.82	1.89	1.97	2.05	2.12	2.20	2.27	2.35	2.42	2.50	2.58	2.65	2.73	2.80	2.88	2.95	3.03	3.11
112	1.49	1.56	1.64	1.71	1.79	1.86	1.93	2.01	2.08	2.16	2.23	2.31	2.38	2.46	2.53	2.60	2.68	2.75	2.83	2.90	2.98	3.05
114	1.46	1.54	1.61	1.68	1.75	1.83	1.90	1.97	2.05	2.12	2.19	2.27	2.34	2.41	2.49	2.56	2.63	2.70	2.78	2.85	2.92	3.00
116	1.44	1.51	1.58	1.65	1.72	1.80	1.87	1.94	2.01	2.08	2.16	2.23	2.30	2.37	2.44	2.51	2.59	2.66	2.73	2.80	2.87	2.95
118	1.41	1.48	1.55	1.62	1.69	1.77	1.84	1.91	1.98	2.05	2.12	2.19	2.26	2.33	2.40	2.47	2.54	2.61	2.68	2.75	2.82	2.90
120	1.39	1.46	1.53	1.60	1.67	1.74	1.81	1.87	1.94	2.01	2.08	2.15	2.22	2.29	2.36	2.43	2.50	2.57	2.64	2.71	2.78	2.85
122	1.37	1.43	1.50	1.57	1.64	1.71	1.78	1.84	1.91	1.98	2.04	2.12	2.19	2.25	2.32	2.39	2.46	2.53	2.60	2.66	2.73	2.80
124	1.34	1.41	1.48	1.55	1.61	1.68	1.75	1.81	1.88	1.95	2.01	2.08	2.15	2.22	2.28	2.35	2.42	2.49	2.55	2.62	2.69	2.76
126	1.32	1.39	1.46	1.52	1.59	1.65	1.72	1.79	1.85	1.92	1.98	2.05	2.12	2.18	2.25	2.31	2.38	2.45	2.51	2.58	2.65	2.71
128	1.30	1.37	1.43	1.50	1.56	1.63	1.69	1.76	1.82	1.89	1.95	2.02	2.08	2.15	2.21	2.28	2.34	2.41	2.47	2.54	2.60	2.67
130	1.28	1.35	1.41	1.47	1.54	1.60	1.67	1.73	1.79	1.86	1.92	1.99	2.05	2.12	2.18	2.24	2.31	2.37	2.44	2.50	2.56	2.63
134	1.24	1.31	1.37	1.43	1.49	1.55	1.62	1.68	1.74	1.80	1.87	1.93	1.99	2.05	2.11	2.18	2.24	2.30	2.36	2.43	2.49	2.55
136	1.23	1.29	1.35	1.41	1.47	1.53	1.59	1.65	1.72	1.78	1.84	1.90	1.96	2.02	2.08	2.14	2.21	2.27	2.33	2.39	2.45	2.51
140	1.19	1.25	1.31	1.37	1.43	1.49	1.55	1.61	1.67	1.73	1.79	1.85	1.90	1.96	2.02	2.08	2.14	2.20	2.26	2.32	2.38	2.44
144	1.16	1.22	1.27	1.33	1.39	1.45	1.50	1.56	1.62	1.68	1.74	1.79	1.85	1.91	1.97	2.03	2.08	2.14	2.20	2.26	2.31	2.37
146	1.14	1.20	1.26	1.31	1.37	1.43	1.48	1.54	1.60	1.66	1.71	1.77	1.83	1.88	1.94	2.00	2.05	2.11	2.17	2.23	2.28	2.34
150	1.11	1.17	1.22	1.28	1.33	1.39	1.44	1.50	1.56	1.61	1.67	1.72	1.78	1.83	1.89	1.94	2.00	2.06	2.11	2.17	2.22	2.28
154	1.08	1.14	1.19	1.24	1.30	1.35	1.41	1.46	1.52	1.57	1.62	1.68	1.73	1.79	1.84	1.89	1.95	2.00	2.06	2.11	2.16	2.22
156	1.07	1.12	1.18	1.23	1.28	1.34	1.39	1.44	1.50	1.55	1.60	1.66	1.71	1.76	1.82	1.87	1.92	1.98	2.03	2.08	2.14	2.19
160	1.04	1.09	1.15	1.20	1.25	1.30	1.35	1.41	1.46	1.51	1.56	1.61	1.67	1.72	1.77	1.82	1.87	1.93	1.98	2.03	2.08	2.14
164	1.02	1.07	1.12	1.17	1.22	1.27	1.32	1.37	1.42	1.47	1.52	1.58	1.63	1.68	1.73	1.78	1.83	1.88	1.93	1.98	2.03	2.08
166	1.00	1.05	1.10	1.15	1.20	1.26	1.31	1.35	1.41	1.46	1.51	1.56	1.61	1.66	1.71	1.76	1.81	1.86	1.91	1.96	2.01	2.06
170	.98	1.03	1.08	1.13	1.18	1.23	1.27	1.32	1.37	1.42	1.47	1.52	1.57	1.62	1.67	1.72	1.76	1.81	1.86	1.91	1.96	2.01
174	.96	1.01	1.05	1.10	1.15	1.20	1.25	1.29	1.34	1.39	1.44	1.48	1.54	1.58	1.63	1.68	1.72	1.77	1.82	1.87	1.92	1.96
176	.95	.99	1.04	1.09	1.14	1.18	1.23	1.28	1.33	1.37	1.42	1.47	1.52	1.56	1.61	1.66	1.70	1.75	1.80	1.85	1.89	1.94
180	.93	.97	1.02	1.06	1.11	1.16	1.20	1.25	1.30	1.34	1.39	1.44	1.48	1.53	1.57	1.62	1.67	1.71	1.76	1.81	1.85	1.90

How To Check Whitin Quillers

By ERNEST R. BECKNER, in TEXTILE WORLD

Filling stops are the largest source of weaving-efficiency loss; and, directly or indirectly, the majority of cloth defects stems from filling troubles. The quilling department is the logical place to begin work on the filling problem. An inspection comes first.

Broken filaments: Using a flashlight, inspect several quills from each spindle. Broken filaments indicate rough guides, which must be replaced, or bad yarn, which much be pulled out of production.

Smooth uniform picking: Shine a flashlight, with the light at an oblique angle, on each quill running. Rough contours or ridges indicate (1) a worn picking pawl, (2) ratchet stop not meshing properly with teeth on pick gear, or (3) pick wheel with too few teeth for the type of yarn.

Uniform start-ups, same distance from butt: Loomfixers set feelers from butt distance, and any deviations cause run-outs in the shuttle or filling breaks on the bunch. Uneven startups can come from a worn rubber washer in the chuck, waste in the chuck, and uneven quills.

Uniform knock-offs, same distance from tip: Knock-off distance is one of the factors controlling average quill weights, cycle times, and other things. Quills too full cause bruised yarn in magazines (more loom stops); quills doffed too short inflate piecework earnings, increase magazine hands' workloads, and so on.

Bunch completely covered, half covered, or completely exposed: The type of yarn, necessary conditioning, and running characteristics in the looms determine the bunch cover. Any deviation from established requirements causes trouble.

Feeler roll turns freely: A free-turning feeler roll is necessary to avoid chafing yarn and for a smooth, satisfactory quill.

Feeler-roll tension light: A heavy tension causes a soft shoulder and sloughing in the shuttle; it also wears rough the surface of the feeler roll itself.

Traverse guide lays yarn properly: At the back of its stroke, the traverse guide should lay the yarn $\frac{1}{8}$ in. from the back of the feeler roll, or not past the high point of the feeler roll. A bent traverse guide can throw the yarn too far forward and cause soft shoulders and sloughing off in the shuttle.

Compensator wire proper size: Compensator wires are made in several sizes; and under the proper quilling tension for each one, the wire will ride approximately in the middle of the loop on the knock-off arm. In this middle position, the wire will compensate for much of the tension variation caused by the oscillating motion of the traverse guide. If the wire rests against the front or back of the loop, it doesn't effectively perform its function.

Front and back taper alike and straight: The cop former at the back end of the picking bar must be set to give the same length of back taper as the traverse guide makes at the front. If the front taper is not straight, the traverse guide motion is usually restricted; sometimes the picking-motion cover is not replaced properly.

Sides parallel and straight: A hollow wind in the center usually means a weak spring, which returns the traverse guide to its front position. Deviations from standard procedure at this point are obvious and usually are corrected promptly.

Correct diameter of wound yarn: Diameters seem to creep sometimes at different points of a wound bobbin; and if they are not corrected, they lead to broken picks, tight picks, kinky or snarled filling, tight selvages, loose picks, etc.

Tail cutters operating: The tail cutter is supposed to cut about 95% of the tails. If it doesn't, something is wrong; loom stops are increased and magazine hands are slowed.

Soft nose at barrel of quill. A soft nose causes sloughing off in weaving. Usually, it is caused by something that restricts the motion of the traverse guide; sometimes the picking motion cover is not replaced properly.

Too much backwind: Three to five wraps should be ample for crepes. Flat, less-lively yarns require fewer wraps. Too many wraps of backwind increase the magazine hand's workload.

Cut guides and tension posts; rough traverse guide and feeler roll: Check these items with a sharp knife blade. Cut or rough surfaces must be replaced; otherwise, the yarn will be chafed, tension will increase, and filling stops in weaving will occur.

Aligned supply packages: Supply-package holders are easily knocked out of alignment. Out-of-line packages increase yarn breaks, stretched filling, etc.

Quill-end (tip) bearing running smoothly and cool: When this bearing assembly is set properly for a particular length of quill and is lubricated according to specifications, it should not give trouble. The setting and lubrication must be checked to avoid damaged quill tips and improper wind of the filling and to protect the bearing itself.

Record Transfers

When the inspection has been completed and the results noted, observe and record each transfer—complete or incomplete and the reason.

Here are the various reasons for incomplete transfers:

Faulty magazine delivery to quill carrier: Sometimes the empty-quill magazine gets out of adjustment (loose setscrew) and doesn't drop an empty quill down the upper quill chute. Unless a quill is placed manually in the carrier, the next transfer will be incomplete.

Quill carrier misaligned: Careless fixing or hanging a quill on the transfer can throw the carrier out of alignment. In this case, the quill is out of line with the chuck and quill-end bearing and the thread is not grasped between the quill butt and chuck; as a result, the compensator knocks off.

Chuck hits butt of quill: In this case, the chuck motion is usually restricted by waste around the chuck bearing or the spring inside the gear box is unhooked or weak.

Chuck returns late and releases thread: Here again, waste can cause binding in the chuck bearing. But more likely the trouble is in the gear box.

Rubber bushing in chuck worn; releases thread: When the rubber washers wear out and lose their resiliency, they have to be replaced. This trouble is frequently mistaken for the scissors cutting too early.

Compensator knocks off at transfer: This trouble usually is within the gear box, and it takes a very few minutes to fix. Perhaps the knock-off rod or the catch on the starting handle is not set properly.

Compensator inoperative; does not knock off: This trouble likewise can be in the gear box, or it can be an improper setting of the catch on the starting handle or the knock-off rod.

Transfer is sluggish and uneven: A sluggish transfer is a creeping situation that has gone too long already. The unit should be removed from production for rebuilding.

Scissors thread guides miss: Two causes are not enough backwind and thread guides broken or bent.

Scissors not cutting, dull: The cutting surfaces can be rehoned and lapped with the proper equipment and skill. Many companies simply replace them.

Scissors not cutting, nicked: Nicked scissors are usually caused by carelessness somewhere along the way. The parts must be smooth to function properly.

Feeler roll set too close; cuts yarn: Allow $\frac{1}{32}$-in. clearance between the barrel of the quill and the feeler roll. The feeler roll should begin advancing as soon as the bunch is completed.

Feeler roll set too far away: This improper setting will give an abrupt build-up at the butt of the quill. When the filling is steamed, the yarn loosens and later rolls back behind the abrupt build-up; and filling breaks are caused.

Traverse mechanism binding, not returning properly: Waste, improper lubrication, and a weak spring can cause this binding. The binding can cause the full quill to hang, or too much backwind might be put on.

Thread-catcher finger misses; not enough backwind: This missing will happen with lively yarn. The finger also can be rough and hang the yarn.

Thread-catcher finger misses; sticking: Waste, improper lubrication, and a bent rod can cause this sticking.

The 16 defects listed are the most prevalent; but with further experience, additional causes of incomplete transfers will be noticed, such as short or long quills and warped or crooked quills.

Modern Practices for Tufting Carpets

As demand for tufted products has grown, two important changes in tufted manufacturing have taken place: (1) continuous mechanical improvements of machines now make it possible to tuft a wide range of fabric designs and (2) several man-made fibers and wool are being used in addition to cotton. Therefore there's a significant change in the design of carpets.

Cotton, acetate, rayon, nylon, blends of of nylon, saran, solution-dyed bulked yarn, and wool are the big materials being used in carpets at present. Use of solution-dyed bulked yarn and wool is increasing fast.

Yarns commonly used are 100% nylon, 100% viscose, 80% viscose and 20% nylon blends, all cotton, and all wool.

Many Yarn Combinations Are Used

Another group of fibers being used at present is: blends of spun rayon in 2½s, 3-ply yarn; 100% spun nylon in 2½s, 3 ply; 100% spun rayon in 2½s, 3 ply; 100% cotton in 8½s, 4 ply; and 100% wool in 3/45s.

Still another combination is: 100% solution-dyed spun viscose; 100% wool for cut pile, 90% spun viscose and 10% spun nylon; and 100% wool patterned carpets in two-, three-, and four-color stripes.

Yarn numbers on the wool systems are 27 yds. per oz. to 45 yards. per oz. in two, three, and four plies. Solution-dyed yarns on the cotton system are 43/3 and 43/2.

Lofted Acetate Moves Up Fast

One of the newly developed fibers being tufted is solution-dyed lofted acetate, a heavy-denier continuous-filament fiber. At present, tufting machines are being used to make carpets with a luxury look from this fiber. Carpets are 9, 12, and 15 ft. wide and are tufted on ⅛- and $\frac{5}{32}$-in.-gauge machines.

The carpets are made in many solid colors and combinations of colors in plain, textured, loop pile, and cut pile. A fast-selling model at present is a tweed carpet made from 2,200-den. yarn (approximately the size of 2.42s, 3-ply cotton yarn). The pattern is a high-and-low-loop bark texture.

Another pattern in tweed is a cut-pile carpet. The tweed carpets are tufted in many color combinations: medium beige, light beige, and white; dark brown, mint green, and white; dark brown, medium beige, and white; dark green, medium green, and white; and other unlimited combinations.

Another carpet being produced heavily is a solid-color loop-textured design in high and low pile with random shearing. A ⅛-in.-gauge tufting machine gives a full-pitch, tightly tufted surface. Colors include beige, sandalwood, jade, light gray, brown, and others.

New Patterns Result in High Sales

Sales are high on these carpets made from solution-dyed yarns because the carpets are resilient, are resistant to soiling, can be cleaned without pilling or shedding of pile, and are colorfast.

The first step in producing solution-dyed acetate at mills is twisting the yarn. The yarn is received in 10-in.-dia., single-ply packages that weigh 6.9 lbs. This yarn is twisted to three-ply yarn with 1.35 tpi.

To twist the yarn, modern ring twisters are used. Rings are 6½ ins. in diameter, and gauge is 7½ ins. The front rolls are 3 ins. in diameter, and speed is 164 rpm. Traverse is 9¼ ins.

The top roll is covered with synthetic rubber; the bottom roll and front roll are steel. Rings are lubricated by automatic lubrication. At end breaks of a single-ply yarn, spindles are stopped with a single-spindle stop motion. A three-deck-high, two-package-deep creel is used at the twister.

Spools of ply yarn are taken from the twisters to winders where they are wound to 7-lb. packages for tufting machines.

Wool Yarn Takes a Big Jump

The use of wool yarn in tufted carpets has been increasing in the last two years. This wool yarn is often received at mills in skeins; then it is skein-dyed at the mill. In other instances, the yarn is stock-dyed when it's received.

Skeins are wound to a 20-lb. package on paper tubes at the mill, and then the yarn is twisted to two or three plies as necessary. Finally it's wound to cones for creeling at the tufting machine.

Because of the newer machines and fibers being used in tufting, mills have changed many manufacturing methods. Quality control is the big factor in tufting fabrics successfully. Mill technicians are closely controlling quality at tufting machines, developing designs, and creating new colors.

Basic Methods Change Little

But basic manufacturing methods are still used. For example, backing materials have changed little. Most backing material for carpets is woven jute; some jute-kraft-cord fabric is being used; and cotton duck is used for some cotton fabrics. The cotton duck is now made in 12- and 15-ft. widths with only one seam.

The average speed of tufting machines has remained constant even with pattern attachments added. The average machine speed being run is: 216 ins. wide, 650 courses per minute; 180 ins. wide, 550 courses; and 62- and 54-in. machines, 750 courses.

Three Types of Piles Are Made

A typical mill produces three types of carpets: (1) cut pile, (2) plain loop pile, and (3) pattern loop pile. Machine widths are 9, 12, and 15 ft. with 1,480 needles. Needle gauges are ⅛, $\frac{5}{32}$, and $\frac{3}{32}$ in.

The needles place the tufts in the backing in any desired length: nylon pile is usually ⅜ in. long, cotton is ½ in., and other special carpets have a ⅜-in. pile.

Over-all average efficiency with no time deducted for creeling at style changes is 65%. Since cones of yarns are creeled by transferring the ends from one cone to the next (pigtail creeling), little time is lost in normal creeling. At the foregoing speeds, each machine produces from 700 to 800 yds. of fabric every 8 hrs.

On a wide machine, up to five complete carpets are tufted at one time.

Operating Practices Are Efficient

An efficient setup for operating each machine is: (1) a man operator, (2) a woman inspector-burler, and (3) a woman creel tender.

A second method is to have either two or three employees per machine. Three employees are used on high-quality carpets; only two are used on cheaper carpets. One employee, an operator, has charge of the machine; it's his job to see that the carpet is made right.

Two other employees are menders and are the operator's assistants. One employee checks the tufted carpet for ends out and marks an end out with chalk. He also watches the face of the carpet for bad yarn, which causes streaks. To remove an end of bad yarn, the face of the carpet is measured and the bad cone is removed.

The second mender repairs broken ends with a hand-tufting repair machine.

There Are Many Creel Improvements

One system to make it easy for the creel tender to locate broken ends is:

The creel is divided into two sections, and each section is lettered and numbered. The creel-tube position at the top of the tufting machine is also lettered and numbered to correspond to the creel-identification system.

When an end breaks, the machine operator turns on an electric light at the machine to show exactly where the end is broken. Then the creel tender spots the broken end quickly.

One new development that may become a trend is creels on a floor entirely above the tufting machine. This arrangement results in: (1) ease of cleaning, (2) safety, and (3) ease in creeling. Its only disadvantage is in communication, but an intercom system overcomes this difficulty.

Tufting machines are kept in good mechanical condition by a machinist. But routine fixing in keeping a machine running, such as replacing hooks and needles, is done by the machine operator. Major breakdowns are fixed by the machinist.

Machines are overhauled at pattern changes. Blades are changed on an average of every two weeks when cut pile is being made. Hooks are changed about once a month.

Tables for Card-Room Calculations

By N. H. POMFRET, in TEXTILE WORLD

Here are four roving tables and one drawing table that greatly simplify card-room mathematics.

Table 1 shows at a glance the correct turns per inch required to produce different twist factors in roving made from either cotton or man-made fibers. Turns per inch are read directly in the twist-factor column opposite the hank-roving number.

Examples: A 1.50-hk. roving with a 1.10 twist factor has 1.332 tpi.

Table 2 is used in conjunction with Table 1 to determine the correct twist gear for a hank roving with a specified twist factor.

Example: To produce a 1.75-hk. roving with a 1.20 twist factor, 1.58 tpi. is necessary, as shown by Table 1. The turns-per-inch figure nearest 1.58 is 1.60 in Table 2. The twist-gear column opposite 1.60 tpi. indicates that a 44-tooth gear is needed.

SRRL Recommendations Are Used

Table 3, based on a formula developed by the Southern Regional Research Laboratory for 1-in. cotton, makes it easy to find the proper number of turns per inch for roving made from cotton with different characteristics.

The factor obtained by reading across from the Micronaire-number column to the hank-roving column is divided by the staple length to give turns per inch.

Example: To find the turns per inch for 3-hk. roving made from 1 1/8-in. cotton with a 4.2 Micronaire number, the calculation is: 2.122 (tpi. for 1-in. cotton) ÷ 1 1/8 (ins.) = 2 tpi.

Find Production at Any Speed

Table 4 is used to determine fly-frame production in pounds per hour at any roll speed. This table, prepared specifically for 136-spindle frames with 1¼-in. rolls, can be modified to suit local conditions.

Opposite each hank roving is the production (pounds per hour) at front-roll speeds of 1 to 9 rpm. Production at any roll speed can be determined by adjusting decimal points and making a simple calculation as shown in the example.

Example: To find production per frame per hour of a 4-hk. roving where front-roll speed is 124 rpm. and frame efficiency is 86%, the calculation is:

100 rpm. = 26.50 lbs. (Col. 1)
20 rpm. = 5.30 lbs. (Col. 2)
4 rpm. = 1.06 lbs. (Col. 4)

124 rpm. = 32.86 lbs. (100%)
0.86 × 32.86 = 28.26 lbs. (86%)

Table 4 also can be used to determine the specific number of frames or production hours needed to produce a definite amount of roving.

Example: To find the number of frames running at 80% efficiency needed to produce 16,000 lbs. of 2-hk. roving in 80 hrs. where front-roll speed is 118 rpm., the calculation is:

100 rpm. = 52.90 lbs. (Col. 1)
10 rpm. = 5.29 lbs. (Col. 1)
8 rpm. = 4.23 lbs. (Col. 8)

118 rpm. = 62.42 lbs. (100%)

0.80 × 62.42 = 49.93 lbs. (80%)

$$\frac{16{,}000 \text{ (lbs.)}}{50 \text{ (lbs.)} \times 80 \text{ (hrs.)}} = 4 \text{ frames}$$

Example: To find the number of production hours required for the same four frames to produce 12,000 lbs. of roving, the calculation is:

$$\frac{12{,}000 \text{ (lbs.)}}{50 \text{ (lbs.)} \times 4 \text{ (frames)}} = 60 \text{ hrs.}$$

Table 1—Turns per Inch for Roving Twist Factor

Hank roving	Twist factor 0.75	0.80	0.90	1.00	1.10	1.20	1.30
0.50	0.530*	0.566	0.636	0.7071	0.778	0.848	0.919
0.60	0.581	0.619	0.697	0.7747	0.852	0.929	1.007
0.75	0.649	0.693	0.779	0.8660	0.952	1.039	1.126
1.00	0.750	0.800	0.90	1.0000	1.100	1.200	1.300
1.25	0.838	0.894	1.00	1.116	1.230	1.341	1.453
1.50	0.908	0.967	1.09	1.211	1.332	1.452	1.574
1.75	0.922	1.05	1.119	1.323	1.455	1.587	1.712
2.00	1.06	1.13	1.27	1.415	1.556	1.698	1.839
2.50	1.18	1.26	1.42	1.581	1.739	1.897	2.055
3.00	1.30	1.38	1.56	1.732	1.905	2.078	2.251
4.00	1.50	1.60	1.80	2.000	2.200	2.400	2.600
5.00	1.67	1.79	2.01	2.237	2.460	2.684	2.908
6.00	1.83	1.96	2.20	2.450	2.695	2.940	3.185

* Turns per inch.

TURNS PER INCH required to produce a definite twist factor in roving are obtained by reading this table directly.

Table 2—Roving Twist Gears for 70.8 Twist Constant

Twist gear	Turns per inch	Twist gear	Turns per inch
21	3.34	39	1.81
22	3.21	40	1.77
23	3.07	41	1.72
24	2.95	42	1.68
25	2.83	43	1.64
26	2.72	44	1.60
27	2.62	45	1.57
28	2.52	46	1.54
29	2.44	48	1.47
30	2.36	50	1.41
31	2.28	52	1.36
32	2.21	54	1.31
33	2.14	56	1.26
34	2.08	58	1.22
35	2.02	60	1.18
36	1.97	62	1.14
37	1.91	65	1.08
38	1.86	70	1.01

TWIST GEAR required to produce a specific twist factor is designated by this table where the turns per inch are known.

Table 3—Roving Twist for 1-in. Cotton

Micronaire number	Hank Roving 0.75	1.00	1.50	2.00	3.00	4.00	5.00	6.00
3.5	0.8966*	0.9315	1.221	1.479	1.937	2.347	2.725	3.076
3.6	0.9093	0.9448	1.238	1.500	1.964	2.381	2.763	3.120
3.7	0.9219	0.9579	1.255	1.521	1.993	2.414	2.801	3.163
3.8	0.9344	0.9707	1.272	1.541	2.018	2.446	2.839	3.206
3.9	0.9464	0.9833	1.288	1.561	2.045	2.478	2.876	3.247
4.0	0.9585	0.9959	1.305	1.581	2.071	2.509	2.912	3.289
4.1	0.9705	1.008	1.321	1.601	2.097	2.541	2.948	3.330
4.2	0.9822	1.021	1.338	1.620	2.122	2.571	2.984	3.370
4.3	0.9938	1.032	1.353	1.639	2.147	2.602	3.019	3.410
4.4	1.006	1.044	1.369	1.656	2.172	2.632	3.054	3.449
4.5	1.016	1.056	1.395	1.678	2.197	2.662	3.089	3.488
4.6	1.028	1.068	1.400	1.695	2.221	2.692	3.123	3.537
4.7	1.039	1.079	1.415	1.714	2.245	2.720	3.156	3.565
4.8	1.050	1.091	1.430	1.732	2.269	2.749	3.190	3.602
4.9	1.061	1.103	1.444	1.750	2.293	2.777	3.223	3.640
5.0	1.072	1.114	1.459	1.768	2.316	2.806	3.256	3.677

* Turns per inch.

TURNS PER INCH of roving made from 1-in. cotton are used in determining turns per inch for other staple lengths.

Table 5—Drawing-Frame Production

Hanks	Sliver weight (grains per yard) 50	55	60	65	70
1	6*	6.6	7.2	7.8	8.4
2	12	13.2	14.4	15.6	16.8
3	18	19.8	21.6	23.4	25.2
4	24	26.4	28.8	31.2	33.6
5	30	33.0	36.0	39.0	42.0
6	36	39.6	43.2	46.8	50.4
7	42	46.2	50.4	54.6	58.8
8	48	52.8	57.6	62.4	67.2
9	54	59.4	64.8	70.2	75.6

* Pounds per hank

DRAWING-FRAME PRODUCTION can be calculated by adjusting the decimal point. For example, 200 60-grain hanks weigh 1,440 lbs.

How To Use Drawing Table

Drawing-frame production usually is expressed in hanks. This measure is convenient for calculating wages, but it must be converted to pounds for use in production calculations. Table 5 is designed to aid in this calculation.

Example: To find the weight of 228 hanks of 60-grain sliver, the calculation is:

200 hks. = 1,440 lbs.
20 hks. = 144 lbs.
8 hks. = 57.6 lbs.

228 hks. = 1,641.6 lbs.

Table 4—Fly-Frame Production

Hank roving	Front-roll speed (rpm.) 1	2	3	4	5	6	7	8	9
0.50	2.119*	4.238	6.357	8.476	10.595	12.714	14.833	16.952	19.071
0.60	1.766	3.532	5.298	7.064	8.830	10.596	12.362	14.128	15.894
0.75	1.413	2.826	4.239	5.652	7.065	8.478	9.891	11.304	12.717
1.00	1.059	2.118	3.177	4.236	5.295	6.354	7.413	8.472	9.531
1.25	0.847	1.694	2.541	3.388	4.235	5.082	5.929	6.776	7.623
1.50	0.706	1.412	2.118	2.824	3.530	4.236	4.942	5.648	6.354
1.75	0.605	1.210	1.815	2.420	3.025	3.630	4.235	4.840	5.445
2.00	0.529	1.058	1.587	2.116	2.645	3.174	3.703	4.232	4.761
2.50	0.423	0.846	1.269	1.692	2.115	2.538	2.961	3.384	3.807
3.00	0.353	0.706	1.059	1.412	1.765	2.118	2.471	2.824	3.177
4.00	0.265	0.530	0.795	1.060	1.325	1.590	1.855	2.120	2.385
5.00	0.212	0.424	0.636	0.848	1.060	1.272	1.484	1.696	1.908
6.00	0.177	0.354	0.531	0.708	0.885	1.062	1.239	1.416	1.593

* Production per frame (lbs. per hr.)

FLY-FRAME PRODUCTION shown here is for a 136-spindle frame running at 100% efficiency. Front-roll diameter is 1¼ ins.

Cotton Fiber Graph for Combing

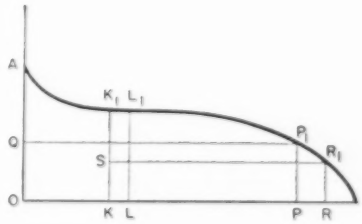
To use this combing chart, the line AO on the longest fiber is halved at Q. A line parallel to the base line cuts the curved portion at P_1. A perpendicular line is then dropped from P_1 to cut the base line at P.

The distance from O to P is measured, and the perpendicular K is drawn at one-quarter the distance from O to P. KK_1 is halved at S, and another line is drawn parallel to the base line to cut the curved portion of the graph at R_1. A perpendicular line is dropped to R.

The distance OR is measured, and at one-quarter the distance the point L is placed. A perpendicular is drawn to L_1. This distance LL_1 is measured and called the effective fiber length. The distance KK_1 is called the first approximation of the effective fiber length.

The effective fiber length could be used in adjusting drafting rolls and to compare (1) fibers fed to a comber, (2) fibers delivered as combed sliver, and (3) fibers rejected as noil.

With correctly adjusted combers, you could expect the effective fiber length of the combed sliver to be longer than the effective fiber length of the stock fed to the machine. You should also expect the effective fiber length of the noil to be much less than the effective fiber length of the stock fed.



EFFECTIVE FIBER LENGTH is vertical line at LL_1 that can be used to adjust drafting rolls and compare fibers on a comber.

Roving Doffing and Incidental Stops

No. of spindles per frame	Time allowed for doffing		Interference	Piecings	Week-end cleaning	Picking flyers combed stock and *rayon staple	Total of incidental stops	
							Carded and *rayon staple	Combed
	Minutes	Hours	%	%	%	%	%	%
70	6	.100	4.00	3.30	2.00		9.30	9.30
80	7	.116	4.00	3.30	2.00		9.30	9.30
90	8	.133	4.00	3.30	2.00		9.30	9.30
100	9	.150	4.00	3.30	2.00		9.30	9.30
110	10	.183	4.00	3.30	2.00		9.30	9.30
120	11	.183	5.00	4.50	2.00		11.50	11.50
130	11	.183	5.00	4.50	2.00	2.50	11.50	14.00
140	12	.200	5.50	5.00	2.00	2.50	12.50	15.00
150	13	.216	5.50	5.50	2.00	3.00	13.00	16.00
160	14	.233	6.00	5.50	2.00	3.00	13.50	16.50
170	15	.250	6.00	5.50	2.00	3.00	13.50	16.50

*If flyers on rayon staple are picked between doffs, use figures in column headed "Combed."

The method of using this table is shown in the following example:

Calculate the hourly production and efficiency of a 108-spindle 10x5 intermediate producing 1.75-hk. roving; the frame has 1 1/8-in. front rolls, 155-rpm. front-roll speed, 1.62 lbs. of roving on the bobbin.

$$\frac{155 \times 0.0070}{1.75} = 0.62 \text{ lbs. per hr. at } 100\% \text{ efficiency}$$

$$\frac{1.62 \text{ lbs. on bobbin}}{0.62} = 2.61 \text{ hrs. to fill bobbin}$$

Hours to fill 2.61

Hours to doff 0.15

Hours per set 2.76

$$\frac{\text{Hours to fill } 2.61}{\text{Hours to run set } 2.76} = 0.945 \text{ apparent efficiency}$$

Time lost for incidental stops = 9.3

$1.00 - 0.093 = 0.907$ $0.945 \times 0.907 = 85\%$ actual efficiency

At 100% efficiency, 0.62 lbs. x 0.857 = 0.531 lbs. estimated net production per spindle per hour.

Checklist for Comber Operation

Here's how to set and maintain Nasmith combers to produce a 48-grain sliver made from long-staple cotton at 84 nips per minute.

1. Time back roll to turn at Index 1 on the cam. Be sure the cam is not worn. Spot the stud at Index 37½ for good piecing.

2. Set the leather rolls to the top comb as close as possible without hitting.

3. Set the leather rolls to back off at Index 20 or 21. This setting is made at the nut opposite the timing nut on the large cam.

4. Be sure that the brackets next to the nipper-knife springs are flush with the frame. If the brackets are too high or too low, they will cause the head to bind.

5. Check the back detaching-roll gear while the comber is running to see if it is backlashing. If there is backlash, the cam may be worn or the clutch cam may be worn out or the clutch is not opening properly. If the clutch is not opening, adjust it at the clutch cam with the two small bolts located there.

6. Check the nipper knives and see that they step Gauge 15 at Index 19. Set each head to take out as nearly as possible the same percentage of noils. Be sure the lifting spoons and bowls are not worn.

7. Set the aspirator so that the damper will be at the edge of the aspirator chute. Clean the aspirator once a week.

8. Set the leather detaching rolls parallel to the steel detaching rolls.

9. Check the draw-box rolls for wear at the necks and flutes and for alignment and binding. See that calender rolls are aligned.

10. Be sure the top comb is lifting at Index 11.

11. Check the chain drives. If they are not tight, the draw-box web will jump or lag at the trumpet.

12. Inspect all leather rolls. Polish the table, trumpets, spoons, and tumblers. Check the slide bar and arm for wear.

13. See that the sector-arm teeth are not too deep or too shallow in the clutch and that they are not worn.

14. Inspect and raise the brushes (every six months), and set new ones at 4⅛ ins. Coated half laps mean that the brushes need replacing or resetting.

15. Set the feed rolls 1 in. from the lip of the cushion plate. Remove chokes and see that the rolls do not bind. Polish the plates, and check the condition of the aprons.

16. Set the table calender rolls as close as possible to the trumpet.

17. Check all over for worn bearings and especially at the draw box, shafting, and gears in the head.

18. If the web is curly, check newly installed brushes and clean and rent them. If the brushes are not the cause, see if the damper is set close enough.

19. If the damper is set too close, noil web will wrap around the aspirator. If the damper is crooked, the web will be intermittently curly at the head where the bend is greatest. A break in the pipe to the fan also can cause a curly web.

20. Trumpets that are rough, dirty, or too small can cause trouble. Where the trumpets alone are at fault, different defects show up at different heads. If the heads feed too fast, the speed needs adjusting.

Yarn Breaking-Strength Charts

The two charts on this page were plotted by F. P. Sheldon & Son from the equations given below each chart. The equations were derived from figures obtained from many tests on a great variety of yarns. The upper chart applies to carded yarns and the lower one to combed yarns. Each chart includes a dotted line for Draper's Standards.

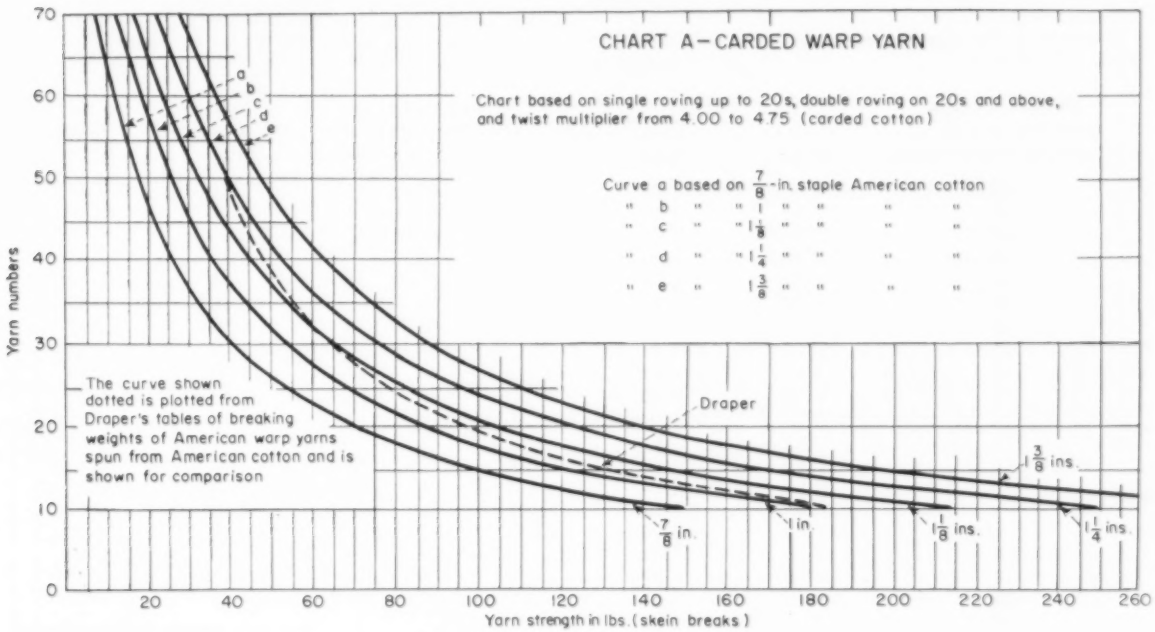


CHART A—CARDED WARP YARN
Chart based on single roving up to 20s, double roving on 20s and above, and twist multiplier from 4.00 to 4.75 (carded cotton)
Curve a based on 7/8-in. staple American cotton
" b " " 1 " " " "
" c " " 1 1/8 " " " "
" d " " 1 1/4 " " " "
" e " " 1 3/8 " " " "
The curve shown dotted is plotted from Draper's tables of breaking weights of American warp yarns spun from American cotton and is shown for comparison
Draper
7/8 in.
1 in.
1 1/8 ins.
1 1/4 ins.
1 3/8 ins.
Yarn numbers
Yarn strength in lbs. (skein breaks)

CHART A shows carded warp-yarn strength at 70% r.h., computed from formula 1,600 (1 ± 0.11a ± 0.01 b) ÷ N = S, where N = yarn number, S = strength in pounds, a = difference in sixteenths inch of staple over or under 1 in. (use + sign when over, — sign when under), b = difference of yarn above or below 28s (use — sign when above, + sign when below)

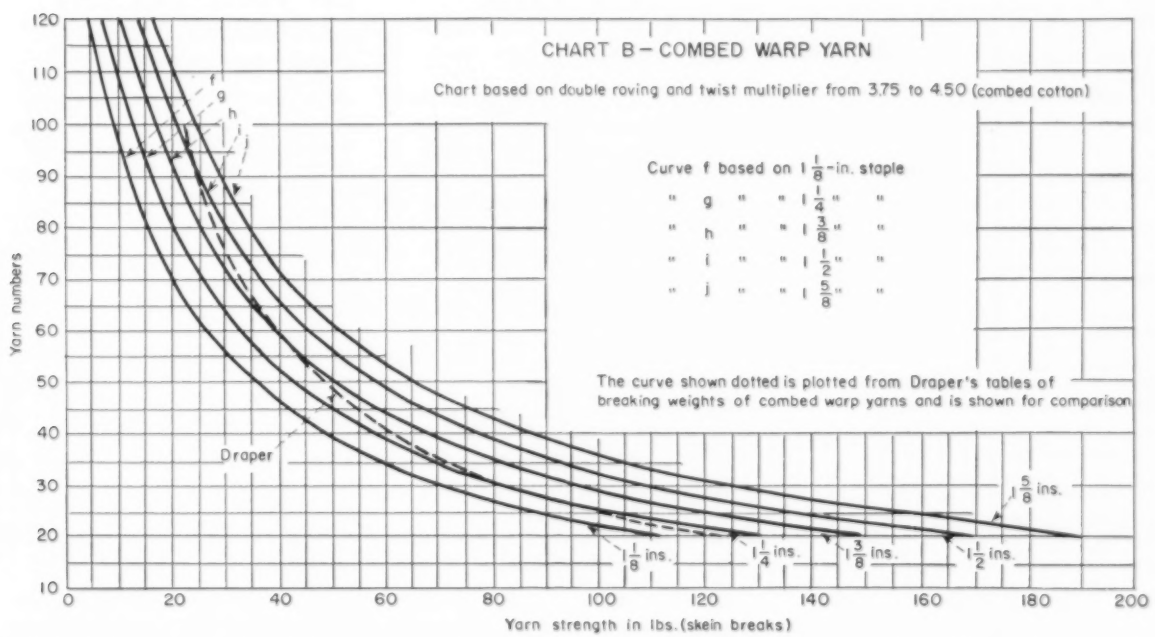


CHART B—COMBED WARP YARN
Chart based on double roving and twist multiplier from 3.75 to 4.50 (combed cotton)
Curve f based on 1 1/8-in. staple
" g " " 1 1/4 " "
" h " " 1 3/8 " "
" i " " 1 1/2 " "
" j " " 1 5/8 " "
The curve shown dotted is plotted from Draper's tables of breaking weights of combed warp yarns and is shown for comparison
Draper
1 1/8 ins.
1 1/4 ins.
1 3/8 ins.
1 1/2 ins.
1 5/8 ins.
Yarn numbers
Yarn strength in lbs. (skein breaks)

CHART B shows strength of combed warp yarn at 70% humidity, computed from formula 1,750 (1 + 0.11a ± 0.01 b) ÷ N = S, where N = yarn number, S = strength in pounds, a = difference in sixteenths inch of staple over 1 in., b = difference in number of yarn above or below 28s (use — sign when above, + sign when below).

Correction Factors for Yarn Size and Breaking Strength

The accompanying table can be used to correct the yarn number and breaking strength at varying humidities to an equivalent yarn with 6½% regain at 65% r.h. and 70° F. under normal manufacturing conditions.

Example: A yarn sizes 19.65s and breaks at 89.5 lbs. when the relative humidity is 52%. To correct the size and breaking strength to an equivalent yarn at 65% r.h. and 70° F., the calculation is:

19.65 × 0.99 = 19.45s corrected size
89.5 × 1.04 = 93.08 corrected break
19.45 × 93.08 = 1,810.4 break constant
1,810.4 ÷ 20 = 90.5 corrected break for 20s

Percent relative humidity at time of weighting and breaking	Size factor	Break factor	Percent relative humidity at time of weighting and breaking	Size factor	Break factor
40	0.98	1.09	60	1.00	1.00
41	0.98	1.09	61	1.00	1.00
42	0.98	1.08	62	1.00	0.99
43	0.98	1.08	63	1.00	0.99
44	0.99	1.07	64	1.00	0.98
45	0.99	1.07	65	1.00	0.97
46	0.99	1.06	66	1.00	0.97
47	0.99	1.06	67	1.01	0.96
48	0.99	1.05	68	1.01	0.95
49	0.99	1.05	69	1.01	0.95
50	0.99	1.05	70	1.01	0.95
51	0.99	1.04	71	1.01	0.94
52	0.99	1.04	72	1.01	0.94
53	0.99	1.03	73	1.02	0.93
54	0.99	1.03	74	1.02	0.92
55	1.00	1.03	75	1.02	0.92
56	1.00	1.02	76	1.02	0.91
57	1.00	1.02	77	1.03	0.90
58	1.00	1.01	78	1.03	0.90
59	1.00	1.00			

Courtesy Whitin Machine Works

Checklist for Spooling and Warping

By JOHN E. ALLEN, in TEXTILE WORLD

Worn and badly set machine parts that cause many yarn defects in spooling and warping can be located by the section man during his spare time if he will follow this checklist.

Spooling

Slack Bands
- Slow spindle speed
- Lost production
- Less yarn on spools
- Run-outs

Rough Creels
- Chafed yarn

Grooved Guides
- Chafed yarn
- Yarn held too rigidly
- Yarn loses elasticity

Guides Set Wrong
- Poorly built spools
- Too much tension on the yarn

Guide Spaced Unevenly
- Yarn does not pass through the guides on spools nearly full
- Bunches form on spools

Holders Out of Alignment
- Variation in yarn tension
- Excessive end breakage

Dull Hand-Knotter Blade
- Slipping knots

Lifter Rods Sticking
- Poorly built spools

Brass Brackets
- Traverse rod throws guides out of position

Bent Spindles
- Strained yarn

Lost Spindle-Rod Caps
- Waste and grit in spindle base
- Worn spindle

Rough or Broken Spool Heads
- Slivers stick into operators' hands

Worn Spool Bushings
- Spools vibrate on spindles
- Yarn is strained

Grooved Yarn Guides
- Chafed yarn

Grooved Tensioning Device
- Variation in tension on yarn on spools

Tensioning Wires Set Wrong
- Strained yarn

Grooved Traverse Rods
- Yarn held too rigid
- Yarn elasticity is lost
- Chafed yarn

Misaligned Traverse Rods
- Guides are set at different angles
- Poorly built spools

Warping

Worn Batcher Rolls
- Variation in yarn tension
- Variation in amount of yarn on spools

Misaligned Beam Arms
- Variation in yarn tension
- Variation in yarn build-up at the end of the beam

Creels Not Level
- Creel packages do not set straight
- Creel packages do not turn freely

Grooved Creel Supports
- Chafed yarn

Grooved Combs
- Chafed yarn

Stop Motion Out of Fix
- Ends out

Bent Stop-Motion Bars
- Bars do not touch drop wires
- Machine does not stop at broken ends

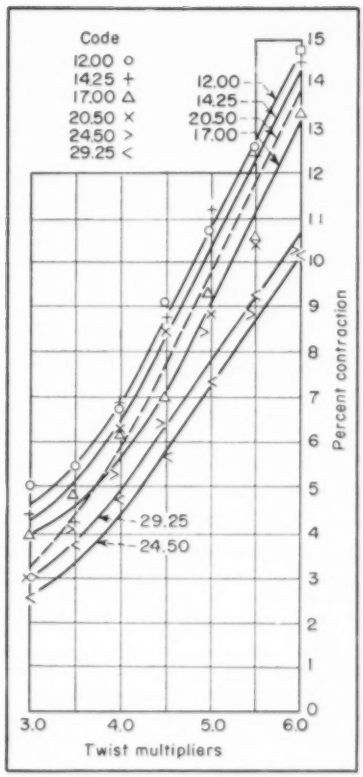
Grooved Drop Wires
- Yarn is held too rigid
- Yarn elasticity is lost
- Chafed yarn

Beams Too Narrow
- Bad selvages

Grooved Front Roll
- Unevenly spaced ends
- Uneven beams of yarn

Slipping Measuring Roll
- Variation in yardage of yarn on beams
- Excessive waste at slashers

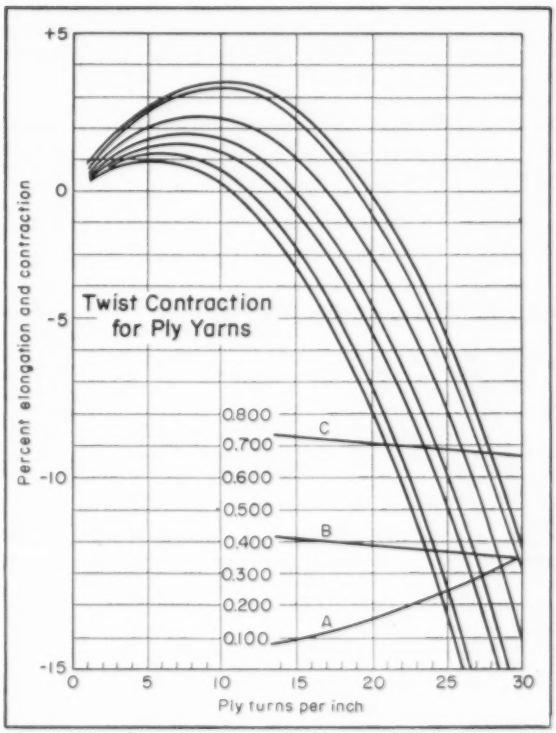
Worn Yardage Counter
- Variation in yardage on yarn beams
- Excessive waste at slasher



Twist Multipliers for Maximum Skein Strength

Classer's staple length (ins.)	Twist multiplier
3/4	5.35
25/32	5.15
13/16	5.00
27/32	4.85
7/8	4.70
29/32	4.60
15/16	4.45
31/32	4.35
1	4.25
1 1/32	4.20
1 1/16	4.10
1 3/32	4.05
1 1/8	3.95
1 5/32	3.90
1 3/16	3.85
1 7/32	3.80
1 1/4	3.75
1 9/32	3.70
1 5/16	3.65

The above spinning twist multipliers should result in maximum yarn strength regardless of yarn number. This information is the result of work conducted in the Clemson Laboratory of the Cotton Branch of the Agricultural Marketing Administration.



Effect of Twist on Ply-Cotton-Yarn Contraction

This chart shows the effect of twist on contraction of two-ply yarns twisted in the opposite direction to that used in spinning. It is only an indication of what happens in ply twisting and is not a complete answer to questions on this subject. Tests by Carl D. Brandt, reported in TEXTILE WORLD, resulted in charts in agreement with this one.

The vertical scale shows percent elongation and contraction. Zero percent is the original length of the single yarns.

The horizontal scale shows ply twists per inch.

For the upper part of the chart, seven different twists of single 13s were used. The lowest twist gave the lowest curve. Each increase in twist raised the curve slightly. Note that elongation increased with more single twist, but from the point where each passes its crest each curve is practically like the others. It would seem that, once the effect of the single twist is overcome, the contractions are alike. The seven single yarns used in this case were twists 13.30, 16.60, 19.25, 20.40, 25.00, 27.70, and 29.80.

For the lines at the bottom of the chart, the horizontal scale represents the single twists per inch.

Curve A shows the maximum elongation for the single twists, the vertical scale in the center of the chart representing in this case the maximum elongation in hundredths of an inch for a 10-in. length.

Curve B shows the relation of the ply twist to the single twist at the point of maximum elongation.

Curve C shows the relation of the ply twist to the single twist at the point where the ply yarn was the same length as the original singles, or where contraction equaled elongation.

Formula for Makeup Pay for Loom Curtailment

When weavers are paid on a piece-rate basis, it is often necessary to give them makeup pay for unavoidable loom stoppage. Since the piece rates are based on hourly rates, the only factor needed for makeup pay is the number of job hours lost.

Here is a simple formula for figuring the weaver makeup pay:

$$\frac{\text{Looms stopped} \times \text{hours stopped}}{\text{Number of looms on job}} = \text{hours lost}$$

Example: A weaver has six looms idle for 4 hrs. because of an electrical shortage on a 30-loom job:

$$\frac{6 \times 4}{30} = 2/3 \text{ hr.}$$

The weaver is paid for $\frac{2}{3}$ hr. at hourly base rates in addition to the piece-rate pay earned on the job.

Average Life of Loom Parts

Here are the results of a survey of three mills showing the average life in hours of five main loom supply parts on X-2 looms.

Mill No. 1—The average life of loom parts on X-2 looms running at 180 ppm. are: (1) shuttles, 4,575; (2) checkstraps, 912; (3) pickers, 602; (4) picker sticks, 1,816; and (5) lug straps, 15,000.

At this mill, the total supply cost per loom per 1,000 loom hours is $19.07.

Mill No. 2—The life of supplies in loom hours on 40-in. X-2 looms running 194 ppm. on 64-sley coarse cotton cloth are: (1) shuttles (fibre-clad), 7,025; (2) checkstraps (endless), 4,906; (3) pickers, 245; (4) picker sticks, 1,088; and (5) lug straps (fabricated rubber), 4,613.

The supply cost per loom at this mill for 1,000 loom hours is $11.44.

Mill No. 3—The life of supplies in loom hours on 42-in. looms running at 196.5 ppm. is: (1) shuttles (dogwood), 2,500; (2) checkstraps, 2,200; (3) pickers, 982; (4) picker sticks (hickory), 3,500; and (5) lug straps, 14,000.

The over-all supply cost per loom for 1,000 loom hours is $18.52 at this mill.

Stop Cloth From Telescoping

Here are several tips to stop telescoping of cloth at the cloth roller of looms as the cloth builds up:

1. Start the end of the cloth correctly at the beginning of the roll. Set the roll tension heavy on the empty roll. Have loomfixers check the cloth-roll spring and racks periodically to be sure they are operating efficiently.
2. Use collars on the cloth rods, keep cloth-rod bearings level, and maintain even tension on the ends of the rods.
3. Use square cloth rods inside wooden shells the full length of the cloth-rod space. Wooden keys fasten the cloth to the wooden shells.
4. Use a 3-in.-dia. wooden tube over the cloth-roll rod. Attach a metal washer to each end of the tube. There's just enough clearance at the end of the washers to allow them to miss the cloth-roll stand.

The main causes of telescoping cloth are:

1. Cloth not started right on the cloth roll
2. Weak cloth-roll springs
3. One end of the cloth roll going up ahead of the other
4. Broken teeth in the spring-shaft gear or cloth-roll rack
5. Spring shaft bent or binding
6. Worn cloth-roll block
7. Badly worn fillet on the take-up roll
8. Take-up roll not level
9. Slack-woven cloth
10. Bent or sprung cloth roll.

Calculate Weaving Labor Cost

Weavers are usually paid on the basis of rate per 1,000 or 10,000 loom picks. In some plants, batteryhands are paid on the same basis. The pick rates are determined by the standards department based on the principles of other piece-work rates; that is, the production of the machines per assignment (in hanks or picks) per hour at a standard efficiency divided into the rate of pay per hour.

Several incentive plans are used to determine both the workload and the rate of pay to be earned. But all plans produce at a rate of 1,000 or 10,000 picks.

Cost Is Based on Picks

To figure the direct labor cost of weavers and batteryhands per pound of fabric, divide the pick rate per 1,000 or 10,000 picks by the pounds of cloth per 1,000 or 10,000 picks.

To find the pounds per 1,000 or 10,000 picks, you must know the picks per inch and either the yards per pound or the pounds per yard.

When the yards per pound or the pounds per yard are not available but the ounces per square yard are given, the pounds per yard may be figured the following way:

$$\frac{\text{oz. per sq. yd.} \times \text{width}}{\text{16 oz. per lb.} \times \text{36 ins. per yd.}} = \text{lbs. per yd.}$$

Assume, for example, that you are weaving a fabric of 1.75 yds. per lb. with 44 ppi. at a total weaver and batteryhand rate of $0.0126 per 1,000 picks.

How the Formula Works

Divide 1x1,000 by the pounds per yard x 36 ins. per yard to get the pounds per 1,000 picks. Divide the rate per 1,000 picks by the pounds per 1,000 picks to get the cost per pound. For a comparison of cost per yard, divide the cost per pound by the yards per pound.

Example:

$$\frac{1 \times 1{,}000 \text{ picks}}{\text{1.75 yds. per lb.} \times \text{44 ppi.} \times \text{36 ins. per yd.}}$$

$$= 0.360 \text{ lb. per 1,000 picks}$$

$$\frac{\$0.0126 \text{ rate per 1,000 picks}}{0.036 \text{ lbs. per 1,000 picks}} = \$0.350 \text{ D.L.C. per lb.}$$

Where: D.L.C. = direct labor cost

$$\frac{\$0.0350 \text{ D.L.C. per lb.}}{\text{1.75 yds. per lb.}} = \$0.0200 \text{ D.L.C. per yd.}$$

When the pounds per yard are available, the pounds per 1,000 picks may be determined by the following method:

$$\frac{0.571 \text{ lbs. per yd.} \times \text{1,000 picks}}{\text{44 ppi.} \times \text{36 ins. per yd.}} = 0.360 \text{ lbs. per 1,000 picks.}$$

The pounds per 1,000 picks are used for a production constant by accumulating the number of 1,000 picks recorded in a period for each style and applying the proper production constant to them.

Predetermine Yards of Woven Cloth

A formula for production in yards of cloth woven per 120 hrs. is:

1. 100% constant—ppm. x 7,200 (mins. in 120 hrs.) x 36 (ins. per yd.)

2. Coefficient — 100% constant — 1 + ppi. × expected operating efficiency.

To find the yards of cloth that will be woven from a loom in a 120-hr. work week, follow this example (shown in parentheses on the tables):

Style No. 464 has 64 ppi.; it's woven on 72-in. Draper L-model looms running at 113 ppm.; the average efficiency for this style of cloth is 90%.

1. Go down the Efficiency % column to 90.

2. Move to Picks-per-Inch column to 64.

3. Enter 0.014063 from Picks-per-Inch column into the keyboard of a calculator.

4. Go down the Picks-per-Minute column to 113 and use the adjacent number 22600.

5. Multiply the number in the keyboard by 22600, and mark off six decimal points.

Picks per inch

Efficiency %	39	42	56	63	(64)	72	92	108
100	.025641	.023810	.017857	.015873	.015625	.013889	.010870	.099259
99	.025385	.025372	.017678	.015873	.015469	.013750	.010761	.009166
98	.025128	.023334	.017500	.015467	.015313	.013611	.010653	.009074
97	.024872	.023096	.017321	.015310	.015156	.013472	.010544	.008981
96	.024615	.022858	.017143	.015152	.015000	.013333	.010435	.008889
95	.024359	.022620	.016964	.014994	.014844	.013195	.010327	.008796
94	.024103	.022381	.016786	.014836	.014688	.013056	.010218	.008703
93	.023846	.022143	.016607	.014678	.014531	.012917	.010109	.008611
92	.023590	.021905	.016429	.014520	.014375	.012778	.010000	.008518
91	.023333	.021667	.016250	.014363	.014219	.012639	.009892	.008426
(90)	.023077	.021429	.016071	.014205	(.014063)	.012500	.009783	.008333
89	.022820	.021191	.015893	.014047	.013906	.012361	.009674	.008241
88	.022564	.020953	.015714	.013889	.013750	.012222	.009566	.008148
87	.022308	.020715	.015536	.013731	.013594	.012083	.009457	.008055
86	.022051	.020477	.015357	.013573	.013438	.011945	.009348	.007963
85	.021795	.020239	.015178	.013492	.013281	.011806	.009240	.007870

Picks per minute

Ppm.	100% Constant	Ppm.	100% Constant	Ppm.	100% Constant	Ppm.	100% Constant	Ppm.	100% Constant	Ppm.	100% Constant
88	17600	128	25600	141	28200	154	30800	166	33200	178	35600
92	18400	129	25800	142	28400	155	31000	167	33400	179	35800
99	19800	130	26000	143	28600	156	31200	168	33600	180	36000
106	21200	131	26200	144	28800	157	31400	169	33800	181	36200
(113)	(22600)	132	26400	145	29000	158	31600	170	34000	182	36400
120	24000	133	26600	146	29200	159	31800	171	34200	183	36600
121	24200	134	26800	147	29400	160	32000	172	34400	184	36800
122	24400	135	27000	148	29600	161	32200	173	34600	185	37000
123	24600	136	27200	149	29800	162	32400	174	34800	186	37200
124	24800	137	27400	150	30000	163	32600	175	35000	187	37400
125	25000	138	27600	151	30200	164	32800	176	35200	188	37600
126	25200	139	27800	152	30400	165	33000	177	35400	189	37800

Good and Bad Practices for Batteryhands

By WILMER C. WESTBROOK, in TEXTILE WORLD

Correct posture has much to do with good job performance for batteryhands. To fill batteries correctly, the batteryhand stands erect with her weight evenly distributed on both feet. She faces the battery in a position about in line with the small end-disk bobbin holder.

The bobbin container (apron pocket, loom box, pinboard, or battery-filler truck) is located so that the bobbins are reached easily with a minimum of movement.

Good and Bad Practices

To plug the bobbins correctly, the batteryhand:

1. Picks up the bobbins with her left hand

2. Unwinds the yarn end with the right hand

3. Places the bobbin in the battery with the left hand

4. Places the yarn end in the thread guide and winds it around the thread holder with the right hand

There is a certain rhythm to these movements that can be acquired with practice.

A batteryhand who cannot run a job properly usually has one or more of the following faults:

1. She stands too far from the bobbin supply and either leans her body, stretches her arms, or takes a step to pick up the bobbins.

2. She stands too far to the side of the battery and has to lean over or take a step each time she places a bobbin in the battery or winds the yarn around the thread holder.

3. She stands with her weight on one foot. Usually this practice is done with a rocking motion with all the weight on the left foot while she picks up the bobbin; and then she shifts her weight to the right foot while she places the yarn on the thread guide and winds it around the thread holder.

4. She changes the bobbin from hand to hand several times while she removes the end of thread and places the bobbin in the battery. A good batteryhand can handle the bobbin and make other necessary movements easily with either hand.

All four faults involve unnecessary movements, take up time, and prevent maximum efficiency. But more important, the unnecessary movements are very tiring; and a tired worker is an unsafe, inefficient, and dissatisfied worker. All such bad work habits should be corrected.

Overwaxing Cotton Warps

Here are reports from five mills showing the results they are getting from overwaxing cotton warps:

Mill A—"The wax applicator is placed between the guide roll and the first split rod at the slasher. We use the same formula used before we started using wax.

"The wax is applied at 200° F. at ½ to 1% by weight. We have difficulty in keeping the wax at a constant temperature, and we have also had trouble with the pipe stopping up between the wax container and the roller trough.

"The diameter of our applicator roll is 4 ins., and it turns at 2 to 3 ft. per min.

"Direct results of the added wax are: (1) Some of the harshness is taken out of the warp to make the yarn smoother and more pliable and flexible; (2) it also lubricates the heddles, reed, and shuttle; and (3) weave-room efficiency is higher."

Mill B—"Our wax applicator is at the front of the slasher just back of the first split rod. There's no variation in our size formula when warps are overwaxed.

"Wax is kept at 180° F., and we vary the roller speed to get the right wax pickup.

"Since we started overwaxing, our seconds have decreased 1.5% and our production has increased 0.8%. Other advantages are: (1) less shedding at the loom, (2) desize tests show 1.3% more size and wax on the warp yarn after the cloth is woven, and (3) we also have a decrease of 29% in warp breaks per loom hour."

Mill C—"Our overwaxing roll is between the measuring roll and the big split rod. We use our standard size formula. We hold the wax at 180° F. and add 0.4% wax by yarn weight to the slashed yarn.

"A recent test showed that stops from sizing trouble were reduced from 0.504 per loom hour to 0.298 when warps are overwaxed. This test was performed on 60x48 cloth with 14s warp and 11s filling. We are still in the experimental stage in overwaxing."

Mill D—"We run our wax applicator roll before the split rod and use our standard size formula. The results of overwaxing are not conclusive because we're still in the experimental stage."

Mill E—"We have been applying hot wax to dried warps at the front of the slasher between the back measuring roll and the lease rods for several months.

"We have changed our warp formula to prevent piling up of top beams on terry warps.

"We keep the wax at 180° F. and add approximately 0.01% wax to the slashed warps. The roller makes about 1 rpm., and the speed depends on the speed of the slasher.

"We have experimented with wax on flat-woven goods a little, but most of our experience has been on terry towels. On this material, we have fewer broken warp ends in weaving and better weave-room efficiency. There is less shedding and end breakage at the slasher."

Slasher Drying Rates

Type of slasher	Contact length (ft.)	Thread length (ft.)	Steam pressure (Psi.)	Drying rate (lbs. per hr.)
Two cylinders (one 7-ft. and one 5-ft.) without rolls	25.8	52.0	12	315
Two cylinders (one 7-ft. and one 5-ft.) with rolls	31.4	67.5	12	375
Three cylinders (one 7-ft. and two 5-ft.)	44.0	70.0	12	485
Three cylinders (two 7-ft. and one 5-ft.)	53.0	86.5	12	620
Multiple cylinders (nine 30-in.)	44.8	60.3	35	1,200
Multiple cylinders (11 30-in.)	55.5	73.8	35	1,550
Four cylinders (Four 5-ft.)	53	100.0	22	1,000
Air-Dri Three 10,000-cu-ft.-per-min. fans Steam coil	48.0	54.5	125	1,000
Air-Dri Two 10,000-cu-ft.-per-min. fans Steam coil	32.0	38.5	125	750

Supply Cost per 1,000 Loom Hours for Heavy Fabrics

Loom	Ppm.	Fabric	Cost
32-in. E	172	Duck	$7.30
32-in. X	172	Duck	8.30
40-in. E	163	Duck	11.30
44-in. E	160	Drill, twill	11.30
46-in. X-2	182	Moleskin	8.15
54-in. XP	144	Duck	11.00
60-in. X-2	160	Drill, sheeting	11.40
64-in. XP	145	Enamelling duck	13.70
66-in. XP	131	Duck	16.90

Service Life of Shuttles on Looms Weaving Industrial Fabrics

Loom model	Ppm.	Loom hours
32-in. E	172	2,688
32-in. X	172	1,584
40-in. E	163	1,828
44-in. E	160	2,163
46-in. X-2	182	2,830
54-in. XP	144	1,863
60-in. X-2	160	1,138
64-in. XP	145	1,102
66-in. XP	131	2,666

Four Ways To Scour Wool

By GUSTAV ZELLNIK, in TEXTILE WORLD

Domestic wool is usually graded on the fine side from 60s to 64s. There are several methods of scouring this wool.

A three-bowl scouring train can be used when the wool does not contain an excessive amount of grease. If the grease content is higher and a lower scouring yield is expected, increase the soap and soda-ash content and use a four-bowl scouring train.

How To Desuint Wool

If the desuinting method of wool scouring is required, use a four-bowl scouring train. The first bowl is used as a desuinting bowl.

The water must be changed often in this bowl to get best results. Change the water when it appears dirty.

The fourth bowl is the rinse bowl, and it gives the wool the final touch to remove the remaining impurities and chemicals used in the scouring process.

For scouring greasy wool of 58s to 64s quality, you can use a formula made up of 8 oz. of red-oil chip soap per gallon and 8 oz. of sodium carbonate per gallon solution. The temperature is maintained at 120° F. in all bowls, and the last bowl is a rinse bowl.

This formula is based on scouring 1,000 to 1,500 lbs. of grease wool per hour. Continue this general cycle all day, and vary it according to the condition of the wool.

If the wool is greasier, use a small percentage more of the figures suggested in the table. If the wool has a lower-than-expected grease content, reduce these figures by a small amount.

Dry Wool at 180° F.

Drying temperature should not exceed 180° F. If the wool is dried at higher temperatures, the wool fibers get too brittle.

Do not dry the wool at temperatures too far below 180° F. because the lower temperature has a detrimental effect on the fibers.

Finally, you should always watch the type and grade of wool to be scoured. Scouring is an operation to be watched by skilled persons, and a close check must be kept on the wool as it goes through the scouring train to see if the wool gets cleaner as it moves from one bowl to the next.

1

	1st bowl	2nd bowl	3rd bowl
Water (gals.)	1,500	1,000	1,000
Temperature (° F.)	125 to 130	125	120
Soap flakes (lbs.)	10 to 12½	7½	0
Soda ash (lbs.)	75	50	0
Hourly addition			
Soap flakes (lbs.)	0	3	0
Soda ash (lbs.)	25	5	0

2

	1st bowl	2nd bowl	3rd bowl	4th bowl
Water (gals.)	1,500	1,000	1,000	1,000
Temperature (° F.)	125 to 130	125	120	120
Soap flakes (lbs.)	15	12½	10	0
Soda ash (lbs.)	75 to 80	50 to 55	0	0
Hourly addition				
Soap flakes (lbs.)	5	3	0	0
Soda ash (lbs.)	25 to 30	7½	0	0

3

	1st bowl	2nd bowl	3rd bowl	4th bowl
Water (gals.)	2,000	1,500	1,000	1,000
Temperature (° F.)	100	130	125	120
Soap flakes (lbs.)	0	10	7	0
Soda ash (lbs.)	0	75	50	0
Hourly addition				
Soap flakes (lbs.)	0	0	3	0
Soda ash (lbs.)	0	25	3	0

4

	1st bowl		2nd bowl		3rd bowl	
Time	Soap (gals.)	Alkali (gals.)	Soap (gals.)	Alkali (gals.)	Soap (gals.)	Alkali (gals.)
6:45	60	60	40	60	30	0
8:30	0	0	20	0	20	0
9:15	0	0	20	0	0	0
10:00	0	0	20	0	0	0
11:00	0	0	20	0	20	0

Acid Cracking Treatment For Wool Waste Water

The acid cracking treatment is the most widely used method to remove wax and grease from scouring liquors. There are several variations of the method. Here's a typical setup:

The scouring liquors, which are sometimes diluted with effluent from other parts of the mill, are run into large tanks that serve for storage and sedimentation. Pipes at several levels in the tanks reject the sand that collects at the bottom.

The liquors are passed through a coarse filter to remove fibers and large pieces of vegetable matter before passing to the cracking tanks. Sulfuric acid is added to reduce the pH to 4, and the mixture is agitated with compressed air or paddles.

Up to 20% of the sulfuric acid is sometimes saved by using calcium salts as cracking assistants. The liquor is allowed to stand for several hours after the acid is added to let the grease settle. The liquor floating on the surface is drawn off and run to waste.

The sludge is pumped to hot storage tanks and then to steam-heated filter presses. Pressure in the presses is kept to 60 lbs. per sq. in. and the temperature to 80° C. Water and wax pass through the filter and are collected in a vessel that separates the hot wax by allowing it to overflow into storage tanks.

The residue in the filter presses may contain up to 20% grease, which cannot be economically pressed. This residue is sometimes used for fertilizer.

Percentage of Oil on Blends

The table below can be used to find the percentage, by weight, of oil to be applied to the blend, the amount of emulsion needed for a weight of the blend, and the proper ratio of water to oil in the emulsion.

Example 1. To find the percentage of oil on a blend to be treated with 16 qts. of a 6-to-1 emulsion per 100 lbs. of blend, locate the value 16 in the column headed "Quarts per 100 lbs. of blend," and read horizontally to the column for the 6-to-1 ratio. This figure, 4.4, is the percentage of oil on the blend.

Example 2. To find the ratio and the quarts of emulsion to treat 250 lbs. of a blend so there will be 5% of oil, locate the value nearest the desired percentage of oil. The listed percentage is 5, and it comes under the 6-to-1-ratio column. On the same line, the value 18 will be found under the column headed "Quarts per 100 lbs. of blend." Because 250 lbs. of blend are to be treated,

$$18 \times \frac{250}{100} = 45 \text{ qts. of 6-to-1 emulsion}$$

Amount of emulsion used on blend		Ratio of water to oil in emulsion						
Gallons per 1,000 lbs. of blend	Quarts per 100 lbs. of blend	2 to 1	3 to 1	4 to 1	5 to 1	6 to 1	8 to 1	10 to 1
		Percentage						
50	20	12.9	9.7	7.8	6.5	5.5	4.3	3.5
45	18	11.6	8.7	7.0	5.8	5.0	3.9	3.2
40	16	10.4	7.8	6.2	5.2	4.4	3.4	2.8
35	14	9.0	6.8	5.4	4.5	3.9	3.0	2.5
30	12	7.8	5.8	4.7	3.9	3.3	2.6	2.1
25	10	6.5	4.8	3.9	3.2	2.8	2.2	1.8
20	8	5.2	3.9	3.1	2.6	2.2	1.7	1.4

Courtesy International Correspondence Schools

How To Eliminate Mispicks in Wool Fabrics

By EUGENE P. SCHREMP, in TEXTILE WORLD

A mispick is the absence of one or more picks of filling all the way across the fabric. If the absence of filling is intermittent or only part way across the fabric, the imperfection is usually referred to as a broken pick.

Mispicks or broken picks may be caused by a number of conditions. Looms are equipped with filling stop motions, but these devices are not infallible. Weak or tender filling that breaks excessively in weaving will increase the chances of mispicks. With this type of filling, extreme caution must be observed in weaving.

Filling-winding machines should be checked. All yarn guides should be inspected and replaced if there are any grooves that may cut the yarn. All broken or cracked porcelain guides must be replaced. Winder tenders should be instructed to keep knots on the outside of the bobbin and to keep knots to a minimum. A knot close to the bare wood of the bobbin is almost certain to cause the filling to break in weaving.

Bobbins wound so large that there is no clearance between the wall of the shuttle will cause trouble by excessive filling breakage. A bobbin that is too small will cause a loss in winder production and excessive waste of filling yarn.

The best method is to determine the maximum diameter and supply a gauge of this size to each operator. Winder tenders should be instructed to check the bobbins and report if any bobbins are being wound over or under the size of this gauge.

Filling reserve on the bobbins used in automatic looms is also very important in eliminating broken picks. A reserve of 4½ picks is necessary to prevent the filling from running out after a delayed induction of the filling feeler.

When the filling runs out at a transfer, there is a possibility that there will be a short broken pick at the magazine side at the time of a filling change. Winder operators should check each spindle at the start of the shift to make certain that the proper reserve is being wound. Insufficient reserve may also cause drag-ins at the time of transfer.

Loom bobbins should be inspected. Bobbins that are splintered or rough should be discarded. Enameled or lacquered bobbins are usually used in weaving fabrics with fine filling. Using old, rough, or chipped bobbins is false economy.

Shuttles should be inspected at the loom. The proper type of shuttle eye should be used. The eye of the shuttle should be large enough to allow a knot to pass through without breaking. If spring tension eyes are used, they should be adjusted so that knots will pass through the tension pads.

Shuttle spring clips must be adjusted to hold the bobbins straight. A bobbin out of line in the shuttle is sure to cause excessive filling breaks.

The filling-stop-motion well should be cleaned of waste at the start of each shift. If waste is allowed to accumulate in the well, the feeler wires will be held up and the stop motion will not operate properly.

Some mills make a practice of having someone clean out the stop-motion wells

during the week-end shutdown and leave the lint on the cloth. This practice will remind the weavers when they come back to work after the week end of the importance of this simple operation.

Batteryhands should check the bobbins and pull off any twisted or crossed yarn. It is also important to keep the filling ends straight on the thread guide.

The filling stop motion should be kept in perfect condition. When the warp is out, the stop motion should be checked and any worn parts replaced.

Loomfixers should be instructed to replace worn parts instead of making the common mistake of changing the recommended settings to compensate for wear. The parts that normally wear are not expensive, and it is false economy not to replace them. Management should keep the stock room well supplied with connectors, daggers, dagger holders, knock-off levers, shields, and rivets.

Some of the newer looms are equipped with a torsion spring that is applied to the feeler-wire shaft. With this type of spring, it is not necessary to go under the loom to change the spring tension.

This spring adjustment is very important. There must be enough spring pressure to insure that the dagger stays in contact with the cam, engages the knock-off lever, and stops the loom when there is no filling under the feeler wires.

Older-type stop motions may easily be converted to this torsion-type spring.

Brake and shipper handles should be adjusted so that they knock off easily. If the brake and shipper handles are hard to knock off when the filling breaks, there is a possibility that the knock-off lever on the brake tube will slip and render the filling stop motion inactive.

The cause of a mispick can usually be determined by studying the defect in the fabric or at the loom. If the mispick extends all the way across the fabric, there is a good possibility that it was caused either by a careless weaver or by the stop motion being out of order. This mispick may have been caused by not finding the right pick when the filling broke or by locking the head motion on the wrong pick.

Mispicks may also be made by the weaver starting an automatic loom with the shuttle in the magazine side one pick at a time. This is caused by the fact that if the filling is broken or cut by the temple blade, the stop motion is inactive due to the weaver knocking the shipper handle off and then starting up again. This condition is usually found when the weavers are not familiar with automatic looms.

Short broken picks at the right side of the fabric at a filling change indicate that the filling is running out because of insufficient reserve or the filling feeler is not adjusted properly. Short broken picks may also be caused by lack of proper spring tension on the filling fork.

Mispicks are sometimes made when the filling stop motion is in perfect order. This may be caused by the filling breaking after the lay passes the point where the dagger contacts the knock-off arm.

This mispick is usually caused by filling catching on something and breaking as the shuttle enters the box. A broken pick of this sort is easy to determine as there will be a loose end of filling at each end of the broken pick.

To correct this type of broken pick, it is necessary to find what is causing the filling to break. Worn binders or mouth pieces, shuttles with insufficient filling grooves, bad filling bobbins, and shuttles being thrown crooked are some of the conditions that may cause this type of broken pick.

Table for Making Fulling Solutions

This table shows the amount of soap or other fulling assistant required for various volumes of solution. The strength of the solution desired does not consider the moisture or other inactive materials that might be present.

Strength of solution required (oz. per gal.)	Materials required		
	50 gal.	100 gal.	250 gal.
1	3⅛	6¼	15½
2	6¼	12½	31
3	9½	18¾	47
4	12½	25	62½
5	15¾	31¼	78
6	18¾	37½	93¾
7	22	43¾	109½
8	25	50	125
9	28¼	56¼	140½
10	31¼	62½	156
11	34½	68¾	172
12	37½	75	185½

Courtesy Procter & Gamble Co.

Testing Wool Blends

Use this formula to find the coefficient of variation of blends of wool and other fibers.

$$CV_1 = \sqrt{CV_R^2 + \left(\frac{C_1 - C_2}{C_1 + C_2}\, CV_B\right)^2}$$

Where: CV_R = true coefficient of variation per cent of the mass per unit length

CV_B = coefficient of variation per cent of the irregularity in blending

CV_1 = coefficient of variation per cent registered by the tester.

C_1 and C_2 = reading constants according to the table below:

Material	Constant (C)
Wool	1
Cotton	0.91
Viscose	0.89
Nylon	0.90

Consider a 50-50 wool-nylon blend. Assume that the blending of the wool and nylon varies along the length of the yarn and $CV_R = 50\%$ and $CV_B = 20\%$.

$$CV_1 = \sqrt{20^2 + \left(\frac{1 - 0.9}{1 + 0.9}\, 0.5\right)^2}$$
$$= \sqrt{400 + 6.75}$$
$$= 20.3\%$$

Card Clothing Required To Cover Cylinders and Rolls

The running feet required per card width in the four columns at the right of the table are calculated from the formula:

$$\text{Length in feet} = \frac{0.271 \times L \times D}{W}$$

Where L = length in inches of the roll
D = diameter in inches of the roll
W = width of the fillet

Card clothing is usually ordered in square feet. To find the square feet, divide the number indicated in the table by the fillet width.

1-in. fillet—12 running feet = 1 sq. ft.
1½-in. fillet—8 running feet = 1 sq. ft.
2-in. fillet—6 running feet = 1 sq. ft.

Roll	Diameter (ins.)	Running Feet required — Card width (ins.)			
		48	60	72	84
1-in. fillet					
Feeders	1 7/16	23	28	33	39
"	1 11/16	25	32	38	45
"	1 15/16	30	36	43	50
Strippers	2 3/16	31	38	46	53
"	2 5/16	32	40	48	56
"	2 1/2	35	43	52	60
"	2 13/16	39	48	58	67
1 1/2-in. fillet					
Doffer dickey	2 13/16	26	32	38	44
" "	3	27	33	39	46
Lickerin	4	36	44	52	61
"	4 1/2	39	49	59	69
Clearer	5	44	54	65	76
"	5 1/2	48	60	72	84
Angle stripper	6	53	65	78	91
Worker	7	61	76	91	107
"	8	70	87	104	122
"	9	78	97	117	137
Fancy	10	87	108	130	152
Tumbler	12	105	130	156	183
"	14	120	152	182	213
"	16	137	173	208	243
2-in. fillet					
Doffer	24	156	194	234	273
"	30	194	244	292	342
"	36	234	292	351	410
Cylinder	48	312	388	468	547
"	54	350	438	527	615
"	60	388	488	585	683

Courtesy Davis & Furber News

Tips on Wool Blending

By WILLIAM J. CROFTS, in TEXTILE WORLD

Insufficient blending or the uneven application of emulsion in woolen mills creates problems such as uneven roving and yarn weights and erratic changes in draft at the cards that make for bad spinning conditions. Where two or more colors are used in the blend, streaky yarns and cloudy fabrics result.

Modern spinning frames don't tolerate such a range in roving weights or condensing as did the mule; so to get the best carding and spinning results, the blends must be more carefully prepared.

Carders have often experienced trouble with a new lot of stock when the old lot of exactly the same stock has been running perfectly on several cards. Inadequate blending or uneven application of emulsion or both are generally to blame.

Well-moistened stock drafts slack on the tape condenser and is desirable for the best spinning results. Dry stocks tighten up the drafts.

Check the Automatic Oiler

Parts of a lot may be properly moistened, while other parts are dry. This condition can generally be traced to an undetected failure of the automatic oiler, and it often puzzles the carder.

The moisture content in the stock has a direct effect on the condensing of the roving, which in turn affects the yarn tests. Well-moistened stock helps the condensing because the moist fibers more easily form a compact roving.

Moisture also binds the fibers more closely together in spinning. A few pounds are added to the yarn tests, or the standard test may be obtained with less twist if desired.

A six-breaker card with two or three broad-band feeds would be needed to break up the uneven blending of an Oxford mix, which would be costly and impractical. An all-white blend for piece-dyed fabrics is assumed to need less blending; but if it is made of stocks such as virgin wool and reclaimed stocks, thorough blending is essential to get smooth, even shades in the fabric.

Virgin wool has a greater capacity for absorbing dye, and it takes on a deeper shade than the reclaimed wool. The result is a mottled or cloudy appearance in the cloth.

Wool Absorbs Emulsions

Oil and water emulsions were originally concocted for and intended only for wool and other animal fibers that will absorb moisture. Cotton and rayon fibers tend to become stringy and soggy when they are wet, and they do not card and blend evenly with the wool fibers.

Most synthetic fibers carry the emulsion on the surface of the fiber. They become stickly and adhere to the Peralta rolls to cause the web to wind around the dividing rolls on the tape condenser. This situation causes a sharp increase in end breakage and heavy, lumpy ends.

To get the smoothest yarns from synthetics blends and cotton or rayon mixes, mix all the wool stocks together and run them through the blending picker. Apply all the emulsion, and add the cotton or synthetics stock to the moistened wool stock. Then give the whole blend two more runs through the picker.

This method moistens the cotton or

synthetics through contact with the wool. Synthetics blends give best results if they are run as dry as possible with just enough emulsion to combat static and aid in condensing the roving.

Many wool oils are on the market that are ready prepared to mix with hot water to form an emulsion. Manufacturers' directions should be carefully followed to be sure of an emulsion that will not separate. Mills that make their own emulsion with untreated oil should observe these rules:

Measure the required amount of water in the emulsion tank, heat it to the boiling point, and dissolve the mixing agent in the boiling water before you add the wool oil. If not properly mixed, some of the oil rises to the surface and makes a sticky mixture at the top of the tank with a thin, watery solution at the bottom.

Some mills that make high-quality fabrics prefer a rich, oily emulsion and claim the finished fabrics have a better hand. All emulsions penetrate the fibers better when they are applied hot.

The amount of emulsion to be applied to the blend varies with the types of stock in the blend. Coarse-fibered blends such as carpet wool, fleece alpaca, or mohair will not absorb and retain as much emulsion as fine wools.

A good average weight of emulsion for these blends is 25 to 30%. For fine-wool blends, 50% by weight is not too much for good results, especially if the wool is spongy or springy.

Emulsion Increase Helped One Mill

In one instance where a three-run olive-drab yarn was made, the wool was an excellent quality but the yarn tests were not up to expectations. The superintendent, accustomed to running coarser blends with 25 to 35% emulsion, thought that 35% emulsion would be ample. Good results were not obtained until the percentage of emulsion went to 50.

There are some exceptions to using large amounts of emulsion on fine-wool blends. Some fine wools contain neps or short fibers, which tend to pill badly when they are wet. The action of the picker and the coarse wire of the first breaker card roll these fibers into small, tough pills.

Many pills card out on the fine wire of the finisher card, but some pills get through and cause spotted cloth. When this trouble is encountered, run the blend as dry as possible consistent with good results.

In making nubs, which are enlarged specks, moisture and soap are two of the mediums used to roll and toughen the nubs. The emulsified oil in the emulsion is similar to soap.

Check Stock for Moisture

To get the same moisture content in every lot, all the various stocks must be checked for moisture content and allowances made for excess moisture or the absence of moisture. Dyed stocks may vary greatly in this respect.

Ignoring moisture tests where there are two or more colors in the blend may throw the lot off the standard shade. Testing for moisture before the stock is weighed in the blend is just as important as matching the dyed stock for the correct shade.

A mill may have an order for 10,000 lbs. of Oxford with 80% white and 20% black with the order split into two 5,000-lb. lots. The dyehouse may dye 1,000 lbs. of black for the first lot, which is delivered to the blending room dry. A week later a second batch of 1,000 lbs. is dyed and delivered to the blending room with 10% moisture.

If moisture tests are not made, one lot will be off shade. The scales at the blending picker will weigh 1,000 lbs. of stock for the first lot but only 900 lbs. of actual fiber for the second lot.

Make sample lots for shade, yarn strength, operating qualities, and fabric weight and appearance. These small lots may have some components that weigh less than 1 lb.; so they need careful weighing on scales that register fractions of an ounce.

How Blending Systems Work

There are many systems of blending; but they all have one basic principle—the sandwich blend. Various colors and classes of stock are laid down layer upon layer on a roomy floor space near the blending picker. If the entire blend is carefully built up with many thin layers, this method is satisfactory.

This system is used in many mills, but labor costs are much higher than other systems because building a 10,000-lb. blend into a huge pile requires many hours of work. One of the lowest costs for blending can be obtained with the Benoit system.

Laying down the blend can be eliminated with two all-iron Fearnaught pickers in tandem. Two or three men can keep this process in continuous operation.

The various stocks and colors are wheeled into the blending room and arranged in a semicircle around the weighing scales. The operator weighs the correct-proportioned amounts of each stock or color in 100-lb. lots that drop into an elongated feed hopper. This process is repeated until all the blend is used.

The automatic oiler is installed at the first table apron because the emulsion must be applied on the first run through to insure even distribution.

From the first picker, the stock is blown through a pipe to a distributing chamber on the ceiling. From here, the stock drops into the hopper of the second picker. From the second picker, the stock can be blown directly to the card storage or to a baling press.

Production is continuous except for brief intervals for machine cleaning. While the system is nearly foolproof, the human element is always present. The key man in this operation is the man who weighs the stock, and only reliable workers should be trusted with this job.

When blends such as 80% wool with 20% nylon are run, the emulsion should not be sprayed directly on the synthetic fibers. The wool stocks can be run through the first picker and the emulsion applied.

The moistened stock should be diverted to a ceiling condenser and deposited in a pile on the floor near the weighing scales. The 20% synthetic fiber is then added to the 100-lb. weighings with an allowance made for the weight of the emulsion added to the wool. The whole blend is then put through the pickers.

How To Set Pickers

The Fearnaught picker will handle any class of stock if the settings are made right. Built like a woolen card, this machine gives the stock a coarse carding action and breaks up lumps of fiber or yarn waste to prepare blends for the carding operation.

The single-action picker acts only once on the stock at the point where the cylinder teeth contact the stock at the feed rolls. The Fearnaught has several points of contact where a combing and blending action takes place.

This type of picker will break fibers when it is operating on fine wools if the worker rolls are set wrong. Broken fibers can reduce good yarn tests. If the settings are made right, seven-run yarns from AAA wool and heavy carpet yarns from rough wools can be made from stock off the same picker.

The rugged teeth of the cylinder and all the complementary rolls are set in straight lines instead of in spirals as they are on a woolen card. The teeth of the workers and strippers can then intersect the teeth of the cylinder, and the teeth of the strippers can be set deep into the worker teeth.

Set Workers to 3/8 In.

This setting should be maintained at all times because it keeps the worker teeth clean on any stocks. The workers are adjusted vertically for setting into the cylinder teeth about $\frac{3}{8}$ in. for short stocks and increased blending. If less action is desired, the settings may be made open to a level with the points of the cylinder teeth.

Horizontal adjustments can be made to set the workers into the stripper teeth about $\frac{3}{8}$ in. The teeth of the strippers must always be set $\frac{3}{8}$ in. into the points of the cylinder teeth so that the cylinder keeps the stripper rolls clean.

If these settings are observed and the doffing roll is doing its job of clearing the cylinder correctly, the machine is practically self-cleaning. The doffing roll has straight teeth that should intersect the cylinder teeth at least $\frac{3}{8}$ in.

The leather strips that act as a brush to clear the cylinder have a fanning action. These strips of leather must be replaced often on rough, long stock because they help to keep the cylinder clear.

Recommended surface speed for the single-action picker is 9,000 ft. per min. The surface speed of the larger Fearnaught cylinder should be about 1,200 ft. per min. This slower speed on the larger cylinder has a gentler action on all textile fibers.

One run of a blend on the Fearnaught picker is generally equal to two runs on the single-action picker.

Where two pickers are used in a continous operation, the installation of permanent magnets or electric magnets on both pickers is an added safeguard to protect the metallic breasts on the cards. Electric magnets are stronger but they require direct current.

Maintenance Tips for Wool Spinning Frames

As a first step in a regular maintenance program, the delivery and draft rolls should receive attention as often as needed. Because cleaning rolls takes time, the use of cleaners is a good preventive-maintenance measure.

Keep Fluted Rolls Clean

If fluted rolls are run without cleaners or they are not cleaned, emulsion, oil, and lint are soon deposited on the rolls. This accumulation lifts the press rolls from the boss rolls and allows the roving to break and make uneven yarn.

Periodic attention should be given to the fluted rolls. They should be taken out of the frame to clean the bearings of waste. This is also a good time to check on roll stands.

If twister-tube nibs are found grooved and worn, they should be replaced. Proper setting should be given to twister-tube nibs. Worn or grooved nibs will reduce the effective gripping power of the nippers. Inspect the twister head for grooves and worn pins.

Give the same inspection to the traverse motion. Careful maintenance of the traverse motion will prevent the grinding of fluted rolls.

Bolsters are often neglected. Periodic oiling is not enough for cast-iron bolsters. They should be removed at least once a year, wiped off, and cleaned in a solvent such as kerosene.

Syphon oil from the bolster case, clean it with a swab before the spindle is replaced in the case, and add new oil. Plumb spindles once a year, and correct those out of plumb. Use a bobbin with a wooden plug attached to set spindles to the ring. This plug should be $\frac{1}{8}$ in. smaller in diameter than the inside of the ring and evenly balanced to avoid run-out.

Shim spindles not in the center of the ring with paper placed between the bolster seat and the bolster rail. If spindles are improperly centered, bobbin sizes will vary.

Some spinning frames have an oil well under the ring rail. Wicks lead to the ring, and lubrication takes place by capillary action. Make sure that the reservoirs are kept full at all times to provide adequate lubrication.

A better system has an oil reservoir at the rear and head end above the ring rail to give a constant, regulated flow of oil. This system helps get higher spindle speeds and less end breakage and can be installed on existing machines.

Rewick and Clean Rings

Rings need a periodic rewicking and cleaning. When the rings begin to show a wavy surface or start to form grooves, they can be sent back to the manufacturer for refinishing. An extra set of rings is needed to replace a complete frame while the rings are being rewicked or reground. If rings show a wavy surface and form grooves, the condition is mostly due to poor lubrication.

Some spinning frames have a scavenger roll where the operator has to break or cut each lap that has accumulated on the roll. Operators have difficulty stripping the roving waste off the scavenger rolls, particularly on synthetics and wool blends.

There is a scavenger that eliminates this difficulty. The rolls, which are open at both ends and made to taper at each end, operate in pairs and are driven by short tapes from the front rolls. The rolls may be easily stripped of waste. A suction device may be applied to the frames instead of scavenger rolls.

In some mills, standard tapes are being replaced with a well-designed tape sheave. Some sheaves are prelubricated and will run for years without attention.

Keep Tape Free of Lint

The spindle tape will accumulate a layer of lint at times. If this occurs, the band should be cleaned or replaced with a new one. Lint can build up until it equals the thickness of the tape. This condition will cause spindle slippage, reduction of yarn per bobbin, and twist variation.

In replacing broken tapes, be certain that the tapes are all cut to the same length. Small differences in lengths of tapes will cause variations in the twist and often contribute to lighter doffs when the operator might change the pick on the builders because of a few large bobbins.

Give consideration to wooden bobbins. Loose or missing ferrules in the top and bottom of the bobbin will make bobbin vibration. This condition results in large and small bobbins and slack twist and will decrease the efficiency of the frame. Chipped heads will cause difficulty in spooling and winding and will damage spinners' hands.

To prevent excessive wear and stretching, chains at the head end should be removed at the annual overhaul and flushed in a solvent to remove the dirt accumulated between and on the links. A worn or stretched chain can make spindle rails jump and float. Don't use too much grease on the head-end bearings.

In some mills there are roving spools that are poorly wound, some spools with not enough rub or condensing applied to the roving, and many spools that are small in diameter. Roving spools should be at least 12 ins. in diameter. Large-size spools result in greater efficiency.

The winding of spools should be improved so that the roving will not slough off over the side of the spool head. Good roving spools will reduce waste and end breakage.

The spinning-room overseer is responsible for yarn size, turns of twist per inch, using the right-size traveler, and the efficiency of the frame. A good maintenance program will keep his frames operating in sound condition to produce the quantity and quality of yarns needed at the lowest cost.

Roving and Spinning Production—American System

These formulas are useful for figuring the production of a roving frame or spinning frame on the American System of spinning.

Roving Production

$$\frac{\text{spindle speed} \times \text{efficiency}}{\text{hank roving} \times \text{tpi.} \times C} = \text{lbs. per spindle per hr.}$$

Spinning Production

$$\frac{\text{spindle speed} \times \text{efficiency}}{\text{yarn number} \times \text{tpi.} \times C} = \text{lbs. per spindle per hr.}$$

Constants to substitute for C are, according to the yarn-numbering system used:

Worsted	336.0
Cotton	504.0
Woolen	960.0
Metric	297.6

Courtesy Whitin Machine Works

Equivalent Ounce Top, Dram, Grain, And Hank Roving

This table, suggested by John C. Lowe, is convenient for changing from one method of sizing to another in worsted drawing. It gives the equivalents in each of the four methods of designating the size of the end.

Ounce top	Dram roving	Grains	Hank roving
5 Yds.	40 Yds.	40 Yds.	560 Yds.
2	256	7,000	0.0714
2¼	288	7,875	0.0635
2½	320	8,750	0.0571
2¾	352	9,625	0.0520
3	384	10,500	0.0466
3½	448	12,250	0.0408
4	512	14,000	0.0357
4½	576	15,750	0.0318
5	640	17,500	0.0286

How To Calculate Production on Filling Winders

By DEANE R. QUINTON, in TEXTILE WORLD

Here is how we figured productivity on our filling winders:

Production and Spindle Speed

Production is directly in proportion to spindle speed. Here are actual figures: On 150-den. rayon (35.43 cotton-number equivalent) at 5,200 rpm., a spindle will fill a 7⅞-in. bobbin with 2,035 yds. of yarn in 6.033 mins. This yardage weighs 480 grains.

The following table shows production at different speeds (assuming 100% efficiency in winding):

A (rpm.)	B (yds.)	C (mins.)	D (lbs.)
5,200	337.31	6.033	27.17
12,500	810.89	2.510	65.31
15,000	973.14	2.091	78.37

A = spindle speed; B = average yards per minute; C = minutes to fill the bobbin; D = production per spindle per 40 hrs.

From this table, the basic figure of yards per minute can be used in direct proportion for any size of yarn.

Productivity of Operators

An operator must replace run-out supply packages, tie up broken ends, start up spindles that miss on the doff, see that the winder has enough empty pinboards, call for empty bobbins when needed, and pick up and clean around the area of her machines. If she doesn't do these things, someone else has to; so it is all a part of winding cost.

Here is our breakdown of an operator's duties:

Replacing supply packages	24 (mins.)
Spindle attendance	27
Fatigue allowance	9
	60 mins.

Spindle attendance includes all other duties previously listed except replacing supply packages. The time element for replacing supply is 0.547 min. This time element was established over hundreds of hours of observations on at least four different kinds of creels.

From these figures, it is simple to figure productivity of the operator. At 0.547 min. for each package, an operator will put up 44 packages an hour. If the package is 2, 3, or 4 lbs., that will be your answer to productivity.

If this breakdown of duties does not suit and your operator only replaces packages, with someone else handling the broken ends, etc., here's what an operator will do in 8 hrs. with packages of various sizes:

Replacing supply packages	51 (mins.)
Fatigue time	9

51 ÷ 0.547 = 93 packages per hour
93 × 8 = 744 packages per 8 hrs.

Now arithmetic tells the tale of production: 744 × 1 lb.; 744 × 2 lb; 744 × 3 lbs.; etc.

Blending Cotton and Nylon

By J. J. JONES, in TEXTILE WORLD

Low percentages (15 to 30%) of nylon can be blended satsifactorily with cotton at several processing points. For most products, 3.0-den., 1⅛-in. nylon should be used. Some machine settings may need changing if 1½-in. staple is used.

Blending at Opening Feeders

This method requires close attention to the calibration of the feeders and careful examination of stock severely opened to determine if the nylon has been overworked. In all cases, this method should be checked by a pilot sample before it is adopted by a mill.

Sandwich Blend

A uniform blend can be made by the sandwich method. Opened cotton and virgin nylon are laid down in alternate layers, and vertical sections of the lay-down are fed to the picker hopper.

Lap Blending at the Finisher Picker

When the cotton contains excessive trash or foreign materials, it may be desirable to clean it thoroughly before blending to avoid the problem of excessive mixed waste. In this case, it is necessary to produce 100%-nylon laps, which frequently requires the use of a two-beater synthetics-type picker.

After the cotton and nylon are processed separately through a breaker picker, the blend can be made on the finisher picker by using individual laps of cotton and nylon stock.

Stock Blending at the Finisher Picker

When the nylon has been stock-dyed, it is possible to avoid making 100%-nylon laps on the breaker picker. After the cotton is processed separately into breaker-picker laps, the blend can be made on the finisher picker by creeling the cotton laps and feeding nylon stock to the finisher-picker apron at a rate to establish the proper blend.

Mechanical Blenders

Several blenders have been successfully used to blend cotton and nylon. With this equipment, virgin nylon and virgin or opened cotton are charged to the feeder hoppers and fed in weighed proportions on a conveyor in such a manner as to produce a sandwich-type blend. The blend is carried on the conveyor to a beater that opens and cleans the stock. Finally, the stock is blown through a duct to a storage bin, from which it is fed manually to the picker feeder or fed by duct directly to the picker.

Blending at the Drawing Frame

If the uniformity of the blend is a secondary consideration, it may be more economical to blend cotton sliver at the drawing frame. This method reduces the amount of mixed waste normally obtained in the opening and cleaning operations.

However, blending carded or combed sliver and nylon carded sliver on the drawing frame results in a nylon-core breaker-drawing sliver. It is possible to minimize this condition by careful placement of the nylon sliver in the sliver bundle creeled into the breaker drawing frame and by using cotton and nylon slivers of approximately the same weight.

Points To Remember

- Where it is necessary to add finish to either component of the blend, the addition should be made to that fiber before blending.
- Many blending units in use by cotton spinners were designed for tangled, unopened, dirty stock and are not satisfactory for 100%-nylon staple. Therefore, before cotton-nylon stock goes through ducts on a production basis, a pilot sample should be evaluated to determine if the nylon has been tangled.
- Fiber damage usually occurs at the picker and card by having the picker beater set too close to the feed rolls and the card feed plate too close to the lickerin. The nylon fibers can be processed with fairly close settings, but the cotton fibers require more-open settings at the picker and card.

Processing Dacron-Cotton Blends

A minimum of 65% Dacron is required in Dacron-cotton blends to get substantial performance benefits from the man-made fiber. Both 1.5- and 3.0-den. Dacron in 1½-in. staple are used with cotton to produce various yarn numbers.

Dacron staple as received is in moderately opened condition and does not require treatment in cotton-opening machinery. However, it can be processed in synthetic blenders and opening equipment.

Whenever possible, three or more bales of Dacron should be blended behind the opening or picking line.

Either one- or two-process standard synthetic or cotton pickers will process Dacron successfully. Kirschner beaters open the fibers better and give more-even laps than blade or Buckley beaters.

Staple that will be subjected to high drafts in roving and spinning should be lubricated. About 0.25 to 0.50% of the lubricant, based on the weight of the stock, can be applied by a spray at the picker hopper. For uniform application, two or more spray nozzles should be placed well above the stock as it is being fed into the hopper.

The picker settings shown in the accompanying table are suggested to prevent excessive fiber breakage and elongation.

If laps have a tendency to split during carding, the following picking suggestions may prove helpful: (1) regulate air currents in the cage section so that the bulk of the stock is deposited on the top screen; (2) use split-lap preventers behind calender rolls; (3) increase pressure on calender rolls; and (4) reduce weight on lap pin by decreasing weight on loggerhead mechanism or reducing air pressure if pneumatic loading is used.

Card Dacron Separately

Because cotton and Dacron have different properties, especially crimp and elongation, the fibers should be blended after they are picked and carded separately.

A rayon-type lickerin and a fancy roll are highly desirable for carding 1.5-den. Dacron staple. The 3-den. staple, however, can be carded without a fancy roll if optimum settings are used. These settings normally require a more-open flats-to-cylinder setting, closer doffer-to-cylinder distance and higher lickerin speeds. Cards, with a fancy, set up according to the accompanying table on card settings will produce excellent sliver from both 1.5- and 3-den. Dacron. With these settings, 3-den. staple has been carded at 8 to 10 lbs. per hr. and 1.5 den. at 5 to 6 lbs. per hr.

Blend During Drawing

Normally, the Dacron and cotton should be blended at the breaker drawing frame by placing two Dacron slivers on each side of two ends of combed cotton. The difference in fiber characteristics causes a wavy breaker-drawing sliver, but the waves will be smoothed out in finisher drawing.

If the cotton sliver tends to wrap on the top front roll, it may be necessary to rearrange the slivers so that both ends of the cotton sliver are fed together in the center. The rearrangement will minimize any unequal tensions in the web and produce a more-even sliver. The tube gear in the coiler head should be kept as clean as possible to minimize coiler-head jams.

Blends have been processed satisfactorily on both three-over-four and four-over-four drawing frames. Both breaker and finisher drawings are usually necessary to prepare a suitable sliver with a homogeneous blend for the roving frame.

Here are the recommended settings for three-over-four drawings: first to third roll, 3 ins.; third to fourth roll, 1¼ ins. For four-over-four drawing, settings are: first to second roll, 1⅝ ins.; second to third roll, 1¾ ins.; third to fourth roll, 1⅞ ins.

Excellent slivers have been produced with a 1⅜-in. dia. front roll running at approximately 325 rpm. Tension must be adjusted to avoid drafting the sliver between the front roll and the trumpet.

It is not necessary to blend at breaker drawing. If lap-back drawing is used the sliver lapper is a good operation at which to blend.

Short- or long-draft roving equipment is suitable for processing Dacron-cotton blends. Normal front-roll speeds for cotton can be used. One-process roving is usually adequate for numbers coarser than 40s, but two or more roving processes should be used for numbers finer than 40s.

Minimum twist, just enough to keep the roving together, should be used. For best results, a number of twist levels should be tried before the final twist multiplier is decided on.

All types of cotton spinning frames, including those with conventional drafting elements, will spin Dacron-cotton blends efficiently. As in drawing and roving, the

Denier, Staple, and Yarn Number To Use

Yarn number	Denier of Dacron	Cotton staple (ins.)
Up to 30/1	3.0	1⅛ combed
30/1 to 40/1	1.5	1⅛ combed
40/1 and up	1.5	1 7/16 to 1 9/16 Pima or Egyptian

Picker Settings and Speeds

Beater speeds (Kirschner)	800 to 900 rpm.
Fan speed	1,500 to 1,600 rpm.
Beater to feed roll	⅜ in. (first section)
Beater to evener pedal	5/16 in. (second section)
Sargent comb to vertical apron	3/16 in.
Lap-pin pressure	30 to 40 lbs
Lap weight	12 oz. per yd.
Lap length	30 yds.

Card Settings and Speeds

	1.5 den., 1½ in.	3 den., 1½ in.
Clothing wire count	110s	100 to 110s
Cylinder	120s	110 to 120s
Doffer	No 1 rayon wire	No. 1 rayon wire
Lickerin	continuous knee	continuous knee
Fancy	No. 30	No. 30
Speeds (rpm.)		
Cylinder	165 to 170	165 to 176
Lickerin	400 to 450	400
Doffer	4.5 to 6.0	8 to 12
Fancy	1,525 to 1,600	1,525 to 1,600
Flats	2 ins. per min.	2 ins. per min.
Settings (0.001 in.)		
Lickerin to cyinder	0.007	0.007
Feed plate to lickerin	0.012	0.012 to 0.015
Screen to cylinder		
front	0.168	0.168
center	0.058	0.058
back	0.029	0.029
Back plate to cylinder	0.029	0.029
Front plate (top) to cylinder	0.034	0.034
Front plate (bottom) to cylinder	0.029	0.029
Flats to cylinder	0.012	0.012 to 0.015
Doffer to cylinder	0.005 to 0.007	0.005
Doffer comb to doffer	0.015	0.015
Fancy to cylinder	1 3/16-in. strip	1 1/8-in. With no fancy, use 0.022-in flats-to-cylinder setting

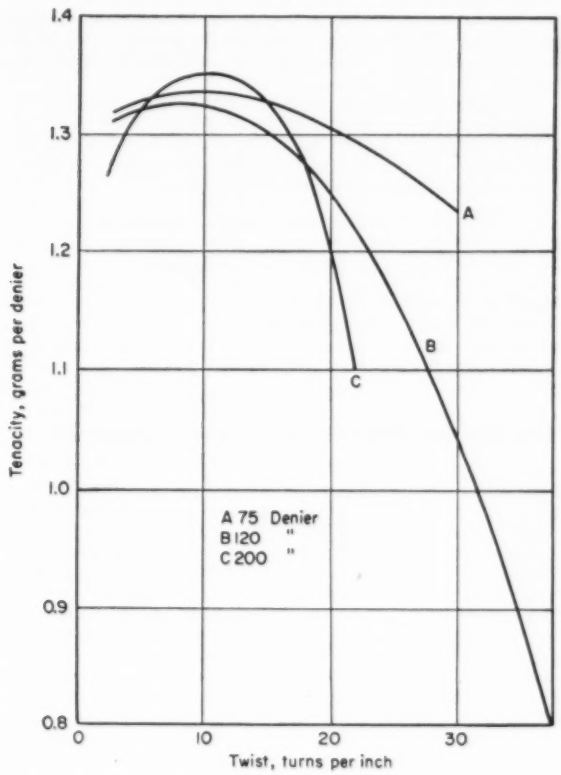
roll settings should be checked to avoid fiber stretching.

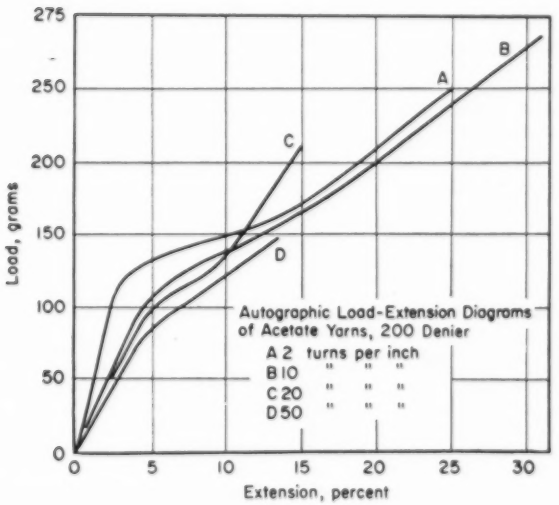
Front-roll and spindle speeds normally used for cotton are satisfactory. Travelers should be changed approximately every 72 spinning hours to prevent cut and bruised yarns.

Twist multipliers above 4.25 should be used to prevent pilling in the fabric. When fine numbers are being spun, if practical, double-creel roving should be used to improve yarn evenness.

Yarn made from Dacron-cotton blends is slightly weaker than yarns made from 100% cotton or Dacron. This reduction is caused by the differences in fiber elongation and surface characteristics of the two fibers.

Effect of Twist on Acetate Yarns





The experiments on which these charts are based were described by J. Eccles in an article that appeared in TEXTILE WORLD.

Effect of Twist on Spun-Rayon Yarns

The data for this chart are the result of tests by Frank Holden, a full account of which appeared in TEXTILE WORLD.

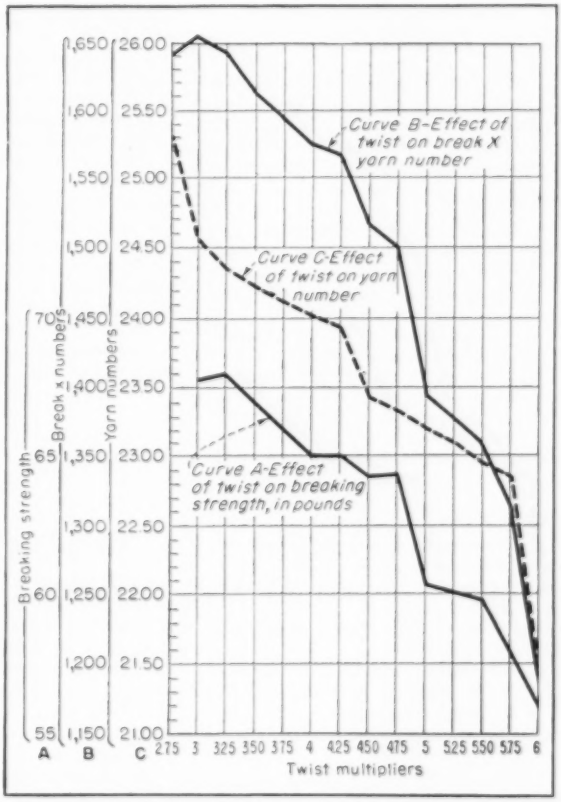
The chart shows the effect of twist on the qualities of a 24s yarn spun from 1½-in., 1.5-den., cut-viscose-rayon fiber, specially made for spinning on the cotton-yarn system.

While the chart represents only one series of tests, it is typical. The maximum strength is obtained with the lowest twist multipliers used, and a smooth curve down through Plot A or Plot B is much like that for cotton yarns twisted beyond the point of maximum strength.

If the contraction plot, C, is considered a straight line, as seems likely, it will be found that it follows very closely the contraction for singles cotton yarns.

The following table shows the important details of the organization used:

Waste opener	—
Double opener—porcupine and two blades	16 oz.
Finisher	—
Card—regular settings, slow flats	60 grs.
Drawing—two operations, bone guides, 320 rpm., 1⅜, 1¾, 1⅞ settings	60 grs.
Slubber—.65 tpi., 1⅜, 1¾ settings	75 hk.
Intermediate—.707 tpi. (as slubber)	2.20 hk.
Spinning—double roving, lightweight, leather over wood middle roll	24s



Percent of Nylon in a Blend

Occasionally it is desirable to check the percent of nylon present in a blend containing cotton, wool, or rayon. The principal reagent used is formic acid (90%). Extreme caution must be used in handling this acid.

The determination can be made on either fiber or fabric. Fiber should be fluffed out and loosely put into the weighing dish. Fabric should be prepared in small ½- to 1-in. squares.

Procedure

1. Remove in an oven all traces of moisture from a clean weighing dish and its lid, and then weigh them on an analytical balance.
2. Place approximately five grams of the blend in the dish; and put the dish again in the oven, at 210 to 220° F., with the lid removed.
3. Allow the sample to dry at this temperature for 3 hrs.
4. Remove the dish with the lid in position, and place it in the dessicator to cool.
5. Remove and weigh the dish to get the net dry weight of the sample.
6. Place the weighed sample in a 250-ml. Erlenmeyer flask, and add 100 ml. of formic acid (90%).
7. Insert a stopper in the flask and shake gently for 2 hrs. Let the fibers settle.
8. Remove the stopper and decant the clear liquid in the flask into a glass beaker. Make certain that no fibers are poured into the beaker.
9. Add another 100 ml. of formic acid (90%), replace the stopper, and shake gently for 1 hr.
10. Filter the solution through a previously prepared Buechner funnel, set up for use on a 500-ml. vacuum filter flask with a vacuum line attached.
11. Make sure no nylon is left in the 250-ml. flask. Check the final formic-acid washing of the flask by adding a drop of it to 25 ml. of water. If the water becomes cloudy, additional washings are needed.
12. Replace the 500 ml. filter flask with a new one, and wash the residue in the Buechner funnel with distilled water.
13. Remove the funnel, and place the residue in a 212 to 220° F. oven for 3 to 4 hrs. Then place the residue in a dessicator, cool, and weigh on an analytical balance.

$$\frac{\text{weight of material before extraction} - \text{weight of material after extraction}}{\text{weight of material before extraction}} \times 100 = \% \text{ wool in the blend}$$

$$100 - \% \text{ wool} = \% \text{ nylon in blend}$$

Calculations for Denier Size

Two systems of measurement, the English and the metric, are widely used in determining the denier size of a yarn. The following calculations are useful in converting skein weight to yarn denier.

English System

I. The denier size of a skein 300 yds. in length = [wt. of skein in grains × 1.64] ÷ 0.7716.

If a gram scale is used instead of a grain scale, substitute 0.05 for 0.7716.

II. The denier size of a 120-yd. skein = wt. of skein in grains ÷ 0.18815.

III. The denier size of any length of yarn = [wt. of skein in grains × 4,464,528] ÷ [skein length × 7,000].

In this calculation, 4,464,528 is the number of yards of 1.0-den. yarn in 1 lb. and 7,000 is the number of grains in 1 lb.

Metric System

I. The denier size of a 450-meter skein = wt. of skein in grams × 20.

If a 225-meter skein is used, multiply by 40 instead of 20.

If a 90-meter skein is used, multiply by 100 instead of 20.

II. The denier size of any length of yarn = [wt. of skein in grams × 9,000] ÷ skein length in meters.

In this calculation, 9,000 is the number of deniers (approximately) in 1 lb. of yarn.

From "Rayon Yarn Calculations," International Textbook Co.

Factors Responsible for Man-Made Fiber Properties

The character of the man-made fibers is entirely dependent on the kind and arrangement of the molecules in individual fibers.

The following factors are useful in characterizing the fibers:

Chemical and physical constitution
Moisture regain
Thermoplasticity
Stress-strain relationships

The chemical and physical constitution of the newer man-made fibers is associated with their unusual resistance to chemicals and microbiological attack and, in some cases, with resistance to ultraviolet light and outdoor weathering.

The low water insensitivity of the new fibers is associated with equivalent wet and dry properties, retention of press, dimensional stability to laundering, to changes in relative humidity, and with quick drying. On the negative side, the low water insensitivity is responsible for the development of static electricity and difficult dyeability.

All of the newer truly synthetic fibers are thermoplastic in nature. Thermoplasticity is associated with thermal properties, heat stabilization, and the ability to secure permanent pleats and creases in fabrics. On the negative side, the thermoplasticity is associated with the tendency to glaze and the burning of holes in fabric by ashes and embers.

The stress-strain relationships also are of great importance in the determination of the character of a fiber. The stress-strain data give pertinent information on strength and extensibility; on resistance to stretch (modulus); on the kind of resilience (whether silk- or wool-type); and on abrasion resistance, which is correlated with the recovery properties, per cent elongation, toughness, and strength.

Textile Fibers Dept., E. I. du Pont de Nemours & Co., Inc.

Handling Nylon 6

While nylon 6,6, made from polyhexamethylene adipamide, has become firmly established for filament or staple uses, nylon 6 is now available in increasing quantities. But nylon 6, being made of polycaproamide, differs chemically and has a lower softening point and thus must be handled differently from nylon 6,6. It dyes faster than nylon 6,6 and possesses a lower degree of fastness to washing. But lightfastness of the two fibers is equivalent.

Dynel Yarn Twist

Dynel requires less twist for optimum strength than cotton. A 3.50 twist multiplier for filling yarns will give optimum strength. Warp yarns should have a twist multiplier of 3.75. Knitting yarns should have a twist multiplier of 3.00 to 3.25, depending on the end use.

Lower tensions by increasing ballooning. Use a traveler with a round or half-round cross section. High tensions cause a lean yarn with high shrinkage.

Tips on Running Coarse Filament Yarn

By D. E. BAYLIS, in TEXTILE WORLD

COARSE continuous-filament yarn is made into fabrics for lawn furniture, upholstery, kitchen coverings, and automobile seat covers. A popular yarn for these goods is 900-den. rayon. Processing difficulties of this yarn have been overcome through trial-and-error methods. Here are some pointers for good results:

If your machinery is adequate, process the yarn from cakes. Purchase the largest possible cake consistent with your yarn-dyeing equipment to take advantage of the lowest-price package from the supplier.

The 900-den. yarn is sold with various numbers of filaments. If the individual filaments are coarser than 9 den., you will have trouble because the yarn tends to be extremely lively. Some of this liveliness can be overcome with a lubricant, but start off with a yarn having filaments finer than 9 den.

Obtain cakes from the supplier wrapped in a snug-fitting knitted cover. This cover helps prevent sloughing in winding. End-break trouble will be almost eliminated. The cover also prevents waste when the cake runs out.

Wind With 3.5% Lubricant

Over 2.5% and less than 5% lubricant should be put on the cakes by the supplier. About 3.5% is a satisfactory amount of lubricant for 900-den. yarn to allow the cakes to wind well.

For good results in dyeing, see that all packages are of about the same density and size. Do not tie knots when ends break but work off the small packages as filling.

To get the best results from winding, make a table about 10 ins. wide and long enough to serve the number of spindles required for the necessary production. Place the table to allow 12 to 13 ins. between the top of the cake and the thread guide when the cake is in position.

Fit fiber-board separators between the spindles so that the yarn balloon will not interfere with the adjacent packages. Place the cake in position on the holder or insert.

Leave the lower portion of the cover on the yarn and the upper portion of the cover tucked in the insert. Center the cake under the thread guide.

The most satisfactory holder for coarse yarns is a self-expanding holder that continually exerts pressure on the cake from the inside. The layers of yarn on the cake are always kept taut and in place. The top or cap used with this holder may be of plastic or tin.

900 Den.—Costs, Speeds, and Waste

Process	Labor (cents per lb.)	Material (cents per lb.)	Speed (yds. per min.)	Waste (percentage)
Winding on dyetubes	5.61	.....	425	0.35%
Pirn winding	5.78	.....	Normal	3.5%
Warping	1.22	.....	150	.....
Slashing	4.18	.....	8	0.5%
Dyeing	2.62	4.58	...	.....
Finishing	1.58	13.48	...	.....

Wind at 425 yds. per min. Open the slub catchers as wide as possible, or remove them.

If these techniques are followed and the operator handles the yarn carefully, end breakage is about two per 100 cakes. Total waste should not be over 0.35%. Winding costs will be 5.61¢ per lb.

Warp From Dyetube

Warp directly from the dyetube on a warper with a spring holder for the dyetube. Because dyeing softens the packages, they will have a tendency to slough during winding. To avoid sloughing, place the packages solidly against the felt or sheepskin so that the yarn cannot fall over the end of the package.

Do not run the warper at speeds in excess of 150 yds. per min. Maintain the creel tension with disks to form a hard warper beam. Low tension in warping, which is necessary for the fine deniers, is not desirable for 900-den. yarns.

Bring the warper beams together in the normal manner used in filament processing at the slasher. Use 0.75% gelatin size to obtain best results in the weave room. Too much size will result in yarn that is too stiff to interlace properly in weaving. Dry 4,400 ends of 900-den. yarn at a slasher speed of about 8 yds. per min. The steam pressure in the drying cans should be 35 psi.

Slash With 100-Yd. Inserts

Trouble with tight ends may be experienced on the loom. To safeguard against this trouble, use a kraft-paper insert every 100 yds. on the loom beam during slashing to firm the beam for weaving.

Waste at the slasher should not be over 0.50% for both hard and soft waste. Draw each warp in individually as the coarse yarn does not allow effective tying in.

Slightly more power on the pick than normal is needed during weaving. This extra power tends to cause sloughing of the filling, but sloughing can be controlled by bristles in the shuttle and a special quilling technique.

To avoid sloughing and to control yarn balloon on the bobbin, wind coarse filament yarn on the quiller at normal spindle speeds but use a long, tapered No. 7 wind with a diameter of not more than $\frac{3}{4}$ in. Bobbins should have three deep grooves about $\frac{1}{8}$ in. deep.

Pirn-winding labor costs should amount to 5.78¢ per lb. There should be no more than 3.5% waste made during quilling.

Don't Dye on Knitted Tubing

We find that knitted tubing on the dyetubes is too costly from a labor standpoint. The tubing also is displaced by the pumping of the liquor, falls off the package, and bunches between the ends of adjacent packages. If the tubing is reused, there is the additional problem of stripping and washing it.

Dyes should give a lightfastness of 50 hrs. and a washfastness equivalent to at least 10 washings at not over 120° F. There should be no evidence of crocking.

Run experiments to determine the type of finishing and percentages of solids to be left in the cloth. The solids left should run from 3 to 5% on the weight of the fabric.

If the fabric is straight, try a double dip in a finishing bath at 160 to 180° F. with a five-ton nip. Juggle your speed and housing temperature to leave approximately 20% moisture in the cloth.

Calender the fabric on a friction calender equipped with a cotton bowl and steel roll, with the face of the fabric to the steel roll. Use a 2-to-1 ratio with steel roll heated to 200° F.

How To Increase Pill Resistance of Dacron

The problem of pilling in Dacron fabrics can be considerably reduced by the modification of yarn structure. The use of plied yarns with relatively high twist gives fabrics more resistance to pilling.

For example, a 2/50 worsted-system yarn with 19 tpi. of Z twist in the single yarn and 24 tpi. of S twist in the plied yarn results in a more pill-resistant fabric than a yarn with 19 tpi. of Z twist in the single yarn and 21 tpi. of S twist in the ply yarn.

Throwing Glass Fiber

By JOHN LUCAS, in TEXTILE WORLD

Glass-fiber yarns are finding an increasing use in textiles. They are woven into marquisettes, draperies, and webbings. They are also used in the electrical and plastics industries and for paper and tape reinforcements.

The most important point in throwing glass fiber is to produce a yarn with a perfectly balanced twist. The plied yarn must not have any kinks or curls because the twist in the yarn cannot be set by conventional methods.

The second most important point is to keep the yarn free from dirt and grease at all operations. Conventional throwing machinery can be used for glass-fiber yarns.

How Yarn Is Numbered

Outlined here is the procedure for producing 150-1/3-3.8 S yarn on cones for weaving, but the same procedure can be used for all yarns. The number 150 in the yarn description means that there are about 15,000 yds. of singles yarn per 1 lb.

The number 1 signifies that the producer's yarn is single ply with one turn Z twist. The second number in this series means that there are three of these singles yarns to be plied.

The third series of numbers means that the finished product has 3.8 S turns to balance the yarn for following operations.

The first throwing operation is performed on 5-B machines with 3½-in.-dia., $\frac{7}{16}$-in.-depth Herr vertical rings. The yarn is received from the producer on twister tubes. These tubes should rotate freely on the jack pins of the 5-B machines.

Place the ends through the faller eyes and draw them through the eye between the faller eyes and feed rolls. Wrap the ends four times on the feed rolls.

Draw the ends through the gathering eye between the feed rolls and the spindle. Wrap the ends four or five times around the take-up spool for Z-twist direction.

Use Nylon Travelers

Set the spindle speed at 4,200 rpm. Add three turns of twist so that you finish with 4 tpi. Use size HKZT 7/16x100 nylon travelers. If you use steel travelers, keep the rings well lubricated.

Use 10-B machines for the second operation where the three twisted ends are plied. Run the spindles at 4,000 rpm., and use 4¼-in. rings with a depth of $\frac{1}{2}$ in. The traveler size should be No. 15 Style 1574. Add enough twist to balance the yarn, which in this case will be 3.8 tpi.

You can use the conventional spool, which has two head diameters of the same size and a straight build, or you can use a bottle-build bobbin. The bottle bobbin has a base diameter much larger than the head diameter, and it tends to build the yarn on the spool in the shape of a bottle. This bobbin delivers the thread freely for coning, direct warping, or tubing, and the base diameter can be grooved for magazine tails.

The final operation is done on Universal No. 50 winders where the yarn is put on 3° 30′ cones. Broken ends cannot be tied, and the ends must be spliced with adhesive cement. Overlap the ends about 2 ins. in joining threads.

Test each splice when it is completed. Splicing is preferably done in the single yarn.

How To Figure Production

To figure production and the number of machines required, use these formulas:

First Operation

Pounds per spindle per hour =

$$\frac{S \times 60}{T \times 36 \times Y}$$

Where S = spindle rpm.
T = turns per inch
Y = yds. per lb.

For example:

$$\frac{5{,}000 \times 60}{3 \times 36 \times 15{,}000} = 0.185 \text{ lbs.}$$

Pounds per spindle per week at 90% efficiency

$$= 0.185 \times 120 \times 0.9 = 19.98 \text{ lbs.}$$

If the weekly requirement of 150-1/3-3.8 S yarn is 25,000 lbs., the number of machines needed is:

$$25{,}000 \div 19.98 = 1{,}250 \text{ spindles}$$
$$= 13 \text{ 100-spindle 5-B machines}$$

Use the same formula for plying the three ends

$$\frac{5{,}000 \times 60 \times 120 \times 0.85}{3.8 \times 36 \times 4{,}87} = 45.9 \text{ lbs. per spindle per week at } 0.85\% \text{ efficiency}$$
$$25{,}000 \div 45.9 = 545 \text{ spindles}$$
$$= 6 \text{ 100-spindle 10-B machines}$$

Third Operation

The formula for winding is:
Pounds per spindle hour =

$$\frac{W \times 60}{Y}$$

Where W = winding speed in yards
Y = yds. per lb.

For example:

$$\frac{218 \times 60}{4{,}870} = 2.68 \text{ lbs.}$$

Pounds per spindle per week at 80% efficiency

$$= 2.68 \times 120 \times 0.80$$
$$= 257.28 \text{ lbs.}$$
$$25{,}000 \div 257.28 = 97 \text{ spindles}$$
$$= 16 \text{ six-spindle machines}$$

Common Properties of Water-Insensitive Man-Made Fibers

Here are some common properties of water-insensitive man-made fibers: high strength; easy launderability; quick drying; dimensional stability in wearing and washing; essentially equivalent wet-dry properties; ability to be heat-stabilized; resistance to mildew and insects; excellent durability; retention of pressing: (a) creases, (b) pleats.

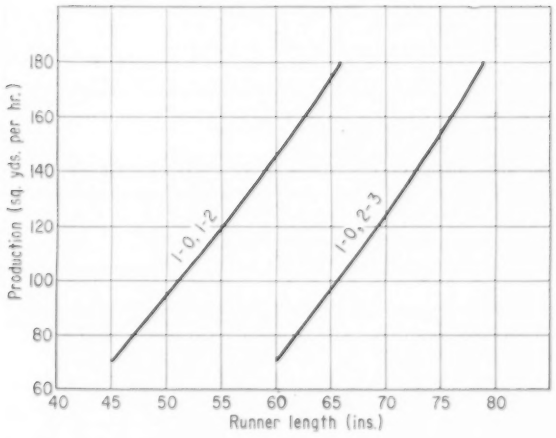
Fiber Characteristics of Verel

Tenacity	2.5 to 2.8 grams per denier
Elongation	33 to 35%
Elastic recovery	88% at 4% E 55% at 10% E
Specific gravity	1.37
Moisture regain	3.5 to 4.0%
Wrinkle recovery	Good
Crease retention	Good
Max. ironing temp	300° F.

Hosiery Sizes

Type	Age (years)	Shoe	Sock size
Infants'	½	1 to 1½	4½
	1 to 1½	2 to 3	5
	2 to 2½	4 to 5	5½
	3	5½ to 6	6
	3½	6½	6½
	4	7 to 8	7
Children's	4 to 4½	6 to 7	6
	4½ to 5	8 to 9	6½
	6 to 7	10 to 11	7
	8 to 9	12 to 13	7½
Misses'	10 to 11	1 to 2	8
	11 to 12	2½ to 3	8½
	12 to 13	4 to 4½	9
	13 to 14	5 to 6	9½
Boys'	8 to 9½	12 to 13	8
	10 to 11½	1 to 2	8½
	12 to 13	2½ to 3	9
	13½ to 14	3½ to 4½	9½
Men's		5 to 5½	9½
		6 to 6½	10
		7 to 8	10½
		8½ to 9	11
		9½ to 10	11½
		10½ to 11	12
		11½ to 12	13

Tricot Production



Tricot production in square yards can be checked readily against the accompanying diagram from Textile Machine Works. The diagram is intended for 168-in. machines running 800 courses per minute at 90% efficiency, but 400-course-per-minute production can be calculated by dividing the production figure by two.

Follow the runner length of the front or the back bar up from the bottom line and read the production at the left opposite to where the vertical line meets the coordinate.

For instance, if the front-bar runner length is 65½ ins., the production will be 100 sq. yds. per hr.

Selecting Yarns for Knitting

Modern knitting machines knit a wide range of yarn sizes; but machines are made with needles spaced from 2 to 60 needles per inch, and yarns of many sizes are required to obtain the best results. Too-heavy yarns produce fabrics with little elasticity. Too-fine yarns produce sleazy fabrics.

The following formulas will provide yarn numbers to give suitable results on most machines. Formulas are also given to figure the correct cut or gauge of machine for certain yarn numbers.

Plain jersey machines:

$$\text{Cotton yarn number} = \frac{\text{cut}^2}{18}$$

$$\text{Worsted yarn number} = \frac{\text{cut}^2}{12}$$

$$\text{Cut} = 4.5\sqrt{\text{cotton yarn number}} = 3.5\sqrt{\text{worsted yarn number}}$$

Circular rib machines:

$$\text{Cotton yarn number} = \frac{\text{cut}^2}{8}$$

$$\text{Worsted yarn number} = \frac{\text{cut}^2}{5}$$

$$\text{Cut} = 2.9\sqrt{\text{cotton yarn number}} = 1.9\sqrt{\text{worsted yarn number}}$$

Fixed-spring-needle machines:

$$\text{Cotton yarn number} = \frac{\text{gauge}^2}{43}$$

$$\text{Worsted yarn number} = \frac{\text{gauge}^2}{29}$$

$$\text{Denier} = 5315 \div \frac{\text{gauge}^2}{43}$$

$$\text{Gauge} = 6.5\sqrt{\text{cotton yarn number}} = 5.4\sqrt{\text{worsted yarn number}}$$

Full-fashioned outerwear machines:

$$\text{Worsted yarn number} = \frac{\text{gauge}^2}{47}$$

$$\text{Gauge} = 6.8\sqrt{\text{worsted yarn number}}$$

Flat latch-needle machines:

$$\text{Worsted yarn number} = \frac{\text{cut}^2}{9}$$

$$\text{Cut} = 3\sqrt{\text{worsted yarn number}}$$

Men's circular-hosiery machines:

$$\text{Cotton yarn number} = \frac{\left(\frac{\text{needles}}{\pi D}\right)^2}{18}$$

For example: 176×3½-in. machine:

$$\text{Cotton yarn number} = \frac{\left(\frac{176}{3.12\times3.5}\right)^2}{18} = \frac{16^2}{18} = 14\text{s or } 2/28\text{s}$$

$$\text{Worsted yarn number} = \frac{\left(\frac{\text{needles}}{\pi D}\right)^2}{12}$$

Note: See Yarn-Number Conversion Table [p. 18, 1957-1958 FACT FILE] to convert to other yarn numbers

Cleaning and Lubrication Chart For Latch-Needle Circular Machines

Time interval	Parts	Cleaner, lubricant, and function	Method
After each cloth roll has been removed	Needles, needle slots, latches and latch slots, sinkers and sinker slots	Compressed air and needle rust-preventive oil to remove cotton lint from parts and to lubricate them for short periods of time	With the machine in motion: (1) hold a long-nozzled air gun near the cylinder and blow up through the sinkers. (2) Blow off the top of the sinkers and sinker cam and feeder-carrier rings. (3) Blow down through the sinkers. Use needle oil in a compressed-air oil sprayer and direct a profuse oil mist from the sprayer at the needles and sinkers.
Each morning	Needles, needle slots, butts and latches, sinkers and sinkers slots	Compressed air, needle rust-preventive oil, and an adhesive oil to clean the previous day's accumulation of dirt and to lubricate the parts for the coming day	Blow all parts clean with compressed air as outlined above. Spray with needle oil as outlined above. Use 1/2 pint needle oil and flush the parts by pouring oil generously on the exposed parts of the sinkers while the machine is in motion. Aim the flow at the sinker-rest ring. Repeat the air cleaning to remove all foreign matter loosened by the previous operations. Apply an adhesive oil sparingly to the needle butts while the machine is in motion by permitting the oil to drip from an oil can down the left side of one stitch cam. While the machine is in motion, apply an adhesive oil to the sinker butts and the sinker cams through the two countersunk oil holes in the top of the sinker-cam ring. Apply an adhesive oil sparingly between the exposed portions of the sinkers and the sinker cam ring.
Daily	Drive-shaft bearing Cylinder-gear ring Pinion-gear bearings	An adhesive oil to lubricate	Fill the oil cups on the top of the drive leg and drive-support bracket on the side of the outer ring and on the side of the legs near the insignia cover
Daily	Hub of large silent chain-sprocket wheel in drive shaft	Absorbed oil or grease to lubricate	Use a grease gun on the wheel hub to force the grease in
Daily	Motor	Compressed air to remove cotton lint from motor windings	Shut off the power from the disconnect switch, and direct a compressed-air stream through the opening in the motor frame to blow lint clear
Daily for the first week of machine use, weekly thereafter	Silent drive chain, take-up sprockets and chains, take-up rollers, take-up worm and worm gear, cloth spreader, hand-wheel drive, cloth take-up rollers, clutch disengaging linkage mechanism and gate safety slide	An adhesive oil to lubricate	Use oil can to lubricate appropriate bearings, oil holes, and oil cups
Semiannually	Motor and bearings in take-up table	Absorbed oil to lubricate	Use a grease gun on take-up table and motor

Note. When parts are cleaned with compressed air, they should be lubricated immediately after as the strong air blast removes lubricants as well as dirt and lint.

An adhesive oil should be used after the needle oil since the needle oil has a tendency to wash away the adhesive oil.

Observe if the oil level in the oil cups drops with machine use. If the levels don't drop, the oil cup and passage are clogged and should be cleaned.

Courtesy Supreme Knitting Machine Co., Inc.

Two Ways To Clean Knitting Machines

There are two common methods of cleaning knitting machines automatically in the U. S. One method uses a traveling cleaner, which cleans up to 30 machines. The second method uses compressed air with a blowing unit attached to each head of every machine.

The traveling cleaner usually rotates on a track hung from the ceiling. The track winds around the knitting room and is located so that it blows off each machine at intervals of 2 to 4 mins.

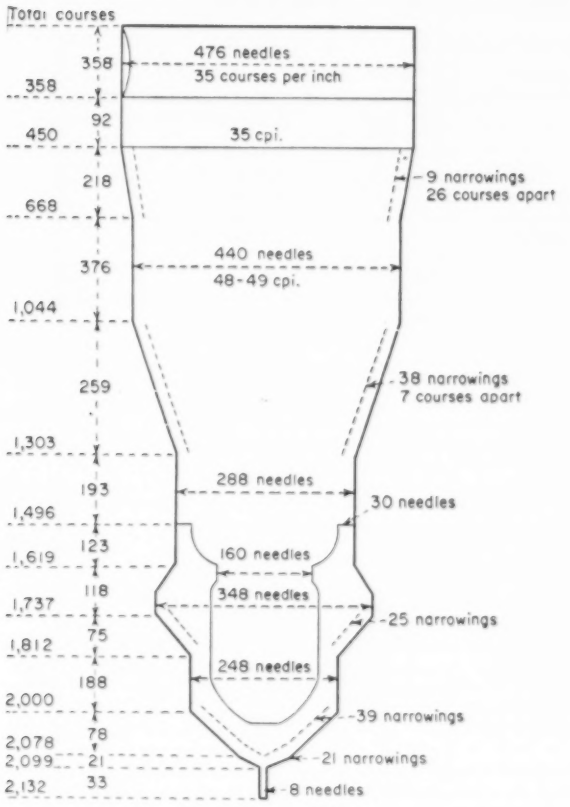
The air blast is created by a fan driven from an electric motor on the cleaner. The fan may rotate or it may have an air duct pointed at the ceiling to keep beams, girders, ceilings, and walls clean.

Individual cleaning systems require a compressor and lines to feed each machine. A 100-psi.-ga. compressor to deliver 55 to 60 cu. ft. of air per minute would be ample for 50 machines. Some mills prefer two smaller compressors for emergency sake, and some mills operate a timing device to blow the machines off at regular intervals and conserve air pressure.

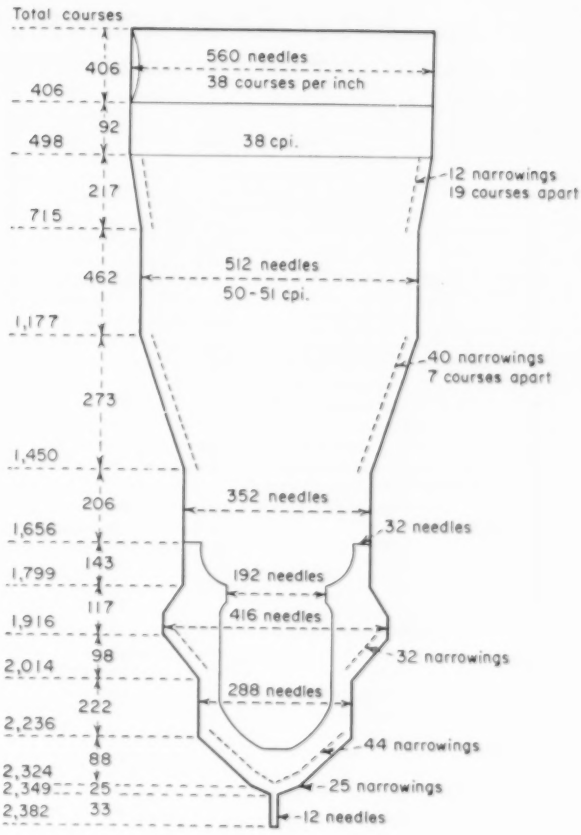
Compressed air enters a rotating valve on the top bracket of each head and is carried through a copper pipe down the take-up bracket arm. Small holes near the end of the pipe direct air to the needles and burrs.

Attempts have been made to clean machines by attaching a blade to the take-up bracket, but these experiments have not been successful to date.

Full-Fashioned-Stocking Construction

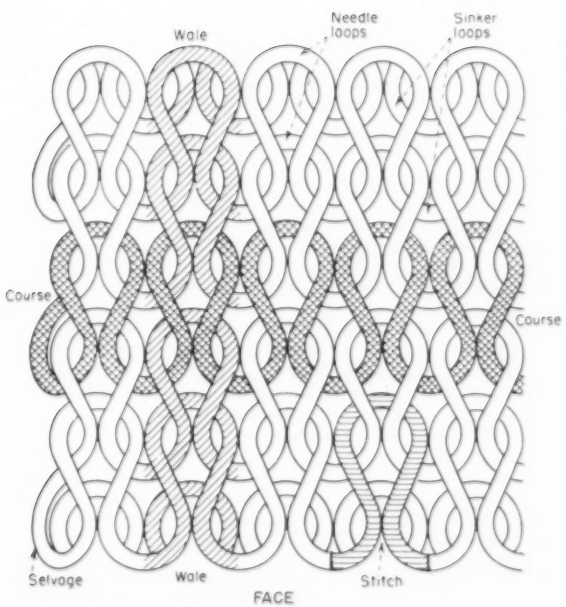


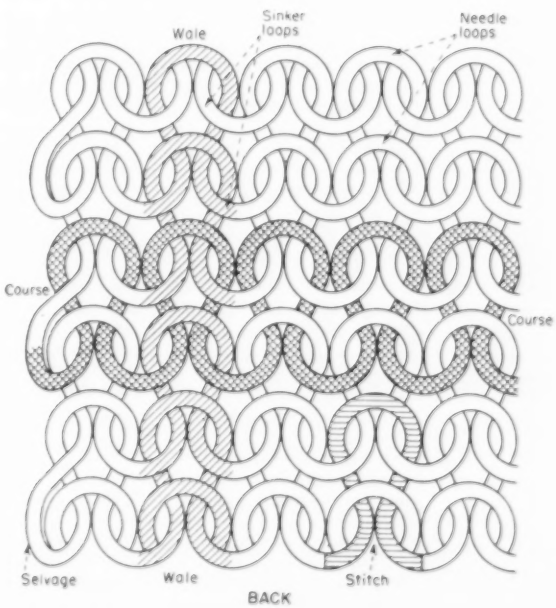
51-gauge, 15 den



60-gauge, 15 den

Parts of Knitted Fabric





Service Chart for Latch-Needle Circular Machines

Trouble	Probable cause	Remedies
Drop stitches	Misaligned yarn carriers	Align carriers.
	Incorrect needle lubrication	Lubricate needles and needle butts. If the condition persists, lower the entire cylinder in steps of 0.010 in. and adjust for proper stitch with micromatic stitch control.
Tuck stitches	In a vertical line because of a defective needle	Replace needle.
	In varying spots because of too much vertical play in sinker-cam ring	Tighten sinker-ring clamps. If play persists, remove an equal number of shims from sinker-ring clamps. If the condition still persists, lower cylinder in steps of 0.010 in. and adjust stitch.
Uneven stitches	Uneven tension	Check for slubs in yarn path and for tipped cones.
	Improperly adjusted stitch cams	Check that all micromatic stitch-control dials are on the same number. If condition persists, check stitch uniformity and realign dials.
Nonuniform cloth indicated by large vertical tight and loose spots	Sinker dial not seated properly on cylinder	Seat sinker dial properly and align.
	Cylinder loose in its recess	Tighten screws holding cylinder to cylinder gear ring.
	Unequal number of shims between cylinder and cylinder gear ring, tilting or stressing the cylinder	Place equal numbers of shims between cylinder and cylinder gear ring.
Slub holes	Large slubs or large knots in yarn	The hole in the three-hole porcelain through which the yarn passes is too large. Thread yarn through the next smallest hole to catch the slub before it passes to the yarn carrier.
Holes in fabric	Slubs caught in the porcelains that allow the thread to pass through but cause tight yarn tension	Remove slub.
	Misaligned yarn carriers	Align carriers.
	Uneven stitches	Check stitch uniformity.
	Misaligned sinker-cam ring	Align sinker-cam ring.
	Tender or soft yarn	Adjust take-up to light take-up.
Vertical runs	Hook or needle broken by large slub or large knot	Replace needle.
Vertical rip	Defective needle	Replace needle.
	Bent needle latches caused by misaligned yarn carriers, generally because of a low feeder carrier ring	Replace needle, raise feeder carrier ring in steps of 0.010 in., and align carriers.
Bent latches	Misaligned yarn carriers	Align carriers.
	Feeder carrier ring too low	Raise feeder carrier ring in steps of 0.010 in.
Vertical wale streaks	High sinker due to lint accumulation in slot	Remove individual sinker, clean slot, and replace. Lubricate properly. If condition persists, remove, clean, and properly lubricate all sinkers, the sinker dial, and sinker rest ring.
Vertical dirt streaks	Improper lubrication of needles and sinkers	Blow knitting elements in area clean with compressed air, and lubricate properly.
Broken sinkers	Dirt and improper lubrication	Replace sinker, and clean and lubricate properly.
	Nicked sinker cams	Polish or replace cams.
Broken needle butts	Improper cleaning and lubrication	Replace needle, and clean and lubricate properly.
	Nicked or damaged stitch or needle raising cam	Polish or replace cams.
Needle latches do not open by themselves after cloth fall-out	Needles are new and latches are still stiff	Following one carrier, open latches with finger or small brush.
	Improper cleaning and lubrication	Clean and lubricate properly.
Cloth slips or pinches in take-up rollers	Incorrect pressure on take-up rollers	Adjust rollers.
Loose cloth rolls, or cloth roll does not wind properly	Loose start on cloth roll	Rewind as tightly as possible by hand and start machine.

Service Chart for Latch-Needle Circular Machines (Continued)

Trouble	Probable cause	Remedies
Machine stopped repeatedly by clutch disengaging	Short circuit	Check entire electrical system. Start from the transformer, and proceed to the electric latch to the cloth fall-out detector to the bottom and top stop motions.
Clutch slips	Loose clutch	Adjust clutch.
Loose motor-drive chain	Stretch in chain	Tighten chain.
Motor does not pull or overheats	Lint accumulation in motor	Blow lint clear, or disassemble motor and remove lint.
	Accumulated dirt and lint in entire machine or overheated bearing in machine due to improper cleaning and lubrication	Clean and lubricate entire machine with needle oil. If condition persists, remove sections and clean dirt from exposed needle butts. Clean sinkers, sinker-rest ring, and sinker dial. Flush profusely with needle oil.
	Tight motor-drive chain	Loosen chain.

Courtesy Supreme Knitting Machine Co., Inc.

Warp-Knitting Production

This alignment chart has been devised by J. B. Lancashire to give the weight in pounds of a 60-yd. length of warp-knitted fabric when the number of threads contained in the fabric, the denier size of these threads, the number of courses per inch in the fabric, and the warp feed in inches per rack of 480 courses are known.

The chart lends itself to the variations that normally occur in fabric manufacture, such as the use of two, three, or four guide bars, each with different runners per rack and combinations of yarns of different sizes. When circumstances make it necessary, each different set of conditions can be dealt with separately and the total weight obtained by addition.

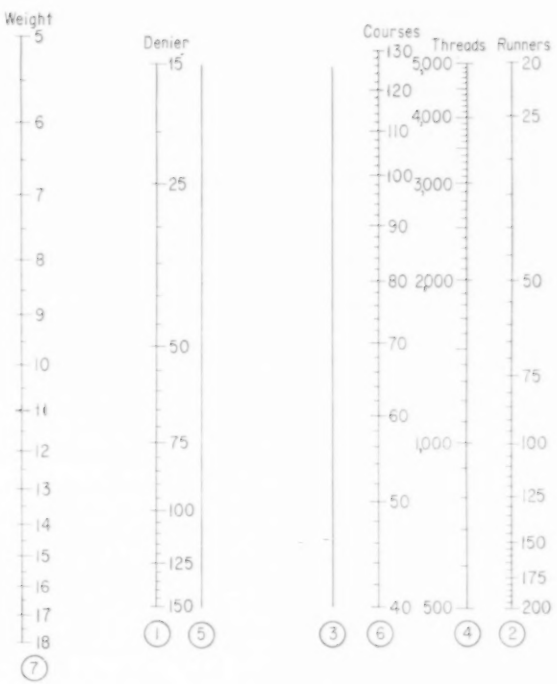
Although the range of the chart is unavoidably limited, readings can be adopted easily when they cannot be taken direct.

For example, if 5,000 threads give a weight that is beyond the range of the chart, a reading can be taken for 2,500 threads and doubled. Here is the key to the nomogram:

Line 1—denier number of the yarn
Line 2—yarn feed in inches per rack of 480 courses
Line 4—number of threads used
Line 6—number of courses per inch in the fabric
Line 7—weight in pounds of 60 linear yards of fabric

How To Use the Chart

Place the edge of a ruler on the denier located on Line 1 and on the runner length located on Line 2. Use the place where the edge cuts Reference Line 3 as a pivot, and turn the ruler until the edge lies on the value of the threads on Line 4. Use the point of intersection with Line 5 as a pivot on which to turn the ruler until the edge lies on the value of the courses on Line 6. The weight of 60 linear yards of fabric is recorded where the edge cuts Line 7.



Checklist for Komet Hosiery Machines

By JAMES H. BLORE, in TEXTILE WORLD

Changing Sliders

1. Remove the door at the location of the broken slider.
2. Remove one slider and its needle only; check the number, and replace immediately.
3. See that no foreign matter has accumulated in the slider slot.
4. Crimp the sliders away from the direction of rotation so that the amount of bend will allow the slider to move freely but not fall of its own accord.
5. Make sure that the correct slider is inserted. (If in doubt, consult the slider set-out.)
6. Make sure that the needle is hooked with the slider.
7. Push the slider in flush with the cylinder.
8. Tighten the door screws.

Changing Needles

1. Remove the top and bottom doors.
2. Do not drop the old needle between the cam box and the cylinder.
3. Put the bottom needle hook into the bottom slider hook.
4. Make sure that broken pieces of the old needle are removed from the slider hook.
5. Make sure that the needle is hooked to its slider by comparing heights of adjacent latches and slider butts.
6. Reset the machine to start to prevent waste.

Changing Sinkers and Bluffs

1. Turn the machine to start or heel and toe. The faulty sinker or bluff should be opposite the main feed.
2. Loosen the sinker-ring nut under the bottom cylinder.
3. Push up the sinker cup from underneath with the nut.
4. Extract the faulty sinker and bluff with pliers.
5. Replace the sinker and bluff while you hold up the sinker cup.
6. Make sure that the bluff is on the correct side (over the slider-bluff bit).
7. Make sure that the sinker is in its correct position.
8. Drop the sinker cup.
9. Tighten the sinker-ring nut.
10. Do not turn the machine when the sinker nut is loose.

Timing and Starting

1. Turn the main drum to the starting position.
2. Turn the striper-selector levers away from the selector bar.
3. Set the chain to the top half of the brass link, and put the trip lever out of action.
4. Replace all broken elements, if necessary.
5. Run the fabric to the take-up rollers before knitting rib.
6. Check the position of the chain-saver rack wheel (in a position so that the low tooth is opposite the racking lever).
7. Put the main-feed yarn finger in position.
8. Be sure that all other yarns are threaded up correctly.
9. Be sure that the double-feed attachment is in time.
10. Line up the timing lever with the slot, with the main pawl ready to start its long rack.
11. Drop the pawl into position.

Press-off in Leg or Foot

1. Discover the cause of press-off.
2. Thread up the yarn.
3. Rack the chain to the starting position.
4. Rack the drum to the starting position (see **Timing and Starting.**)
5. Knit half a dozen courses.
6. Make sure that all latches of rib needles are open.
7. Transfer down by depressing the top transfer cam and turning the machine.
8. Check to see that every needle has one stitch.
9. Restart

Press-off in Heel or Toe

1. Raise the trip lever to allow the pawl to rack the drum out of the heel or toe.
2. Thread up the yarn and proceed as above.
3. Do not rack the drum when the machine is in oscillatory knitting.
4. Do not run the machine in heel or toe with the doors off.

Removing Cam Boxes

1. Set the machine at the starting position.
2. Put the heel-bolt cam and raising cam in such a position that the needles ride in a straight run.
3. Disconnect all levers, rods, springs, etc., without changing their adjustments.
4. Place all spares in boxes or on a clean cloth on the bench where they cannot be damaged or lost.
5. Pull the cam box off straight so the contour of the sliders will not be disarranged.
6. Remove all broken butts, foreign matter, lint, etc.
7. Check the cams for wear, cracks, looseness, protruding screws, etc.; and check the functioning of movable cams.
8. If the machine is left, remove the belt and tie up the handle or remove the handle.
9. Wipe the face of cams with an oily cloth.
10. Make sure that the cam box fits flush to the cylinder.
11. Insert the correct screws. If they are tight, take off the cam box and investigate.
12. Tighten up screws progressively.
13. Connect the springs, rods, levers, etc.
14. Check to see that no parts remain unattached.
15. Turn the machine slowly by hand.

Knitting Stretch Yarn

Knit stretch yarns on your finest-gauge machines. Greater elasticity is obtained if the yarn is run on machines of finer cuts.

Knit stretch yarns with low tensions. High yarn tensions produce tight stitches, and little elasticity is obtained in the fabric even if the stitch cams are pulled low. Stripe in a spun yarn for the looper's rounds so the fabric doesn't run.

Use 140-den. aliginate yarns for the draw thread on Komet socks. This yarn makes a neater welt and saves time in separating. The socks can be pulled apart, and the loose ends will disappear in the scour or dyebath.

Use a lighter star-wheel weight on Komet machines; the regular weight is too heavy for stretch socks. Cut a piece off the regular weight or substitute an aluminum weight for the regular weight.

Hasten relaxation of socks for sizing and looping by placing the socks in a steam box for a few minutes.

pH in Textile Processing

The symbol pH is used to define a system of measurement of the active H^+ ions or (OH^-) ions in a solution. The system is based on Arrenhius's theory of electrolytic dissociation, which assumes that acids, alkalis, or salts, when dissolved in water, dissociate or break up into ions. An ion is an atom, or group of atoms, that carries electrical charges. Hydrogen, H^+, is considered to carry a positive charge. Hydroxyl ions, (OH^-), carry a negative charge.

Most inorganic and many organic materials dissociate when dissolved in water, freeing H^+ and (OH^-) ions. If the H^+ ions are more numerous, the pH of the solution will be less than 7. If the (OH^-) ions predominate, the pH will be more than 7. If there is complete balance between these two groups of ions, the pH will be 7. Pure water is an example of this situation; it has a pH of 7.

Sorenson developed the present pH scale, which is a way of expressing the hydrogen-ion concentration and is based on the negative logarithm to the base 10. Another way of putting it is to say that pH is the logarithm of the reciprocal of the hydrogen-ion concentration.

In Table I, the range of values of H^+ ion concentration will be seen to progress according to the logarithmic system.

The thing to remember is that when the pH is less than 7, the solution is acid; when it is over 7, the solution is alkaline. Each whole degree of pH represents a change in intensity of acidity or alkalinity of 10 times the previous or following degree.

But remember, too, that pH is a measure of intensity, or activity. It doesn't tell you how much acidity or alkalinity is present; it tells you only how busy those ions happen to be at the time.

How To Check pH

Several systems of checking pH have been evolved, including titration with chemicals that change color as pH varies (phenolphthalein, methyl orange), proximate estimation by noting the color change of dyes such as listed in Table II, or by using color comparators such as the Lovibond Comparator. Most recent are the methods developed around electrometric systems in which electrodes of various compositions are introduced into the liquid to be tested. By balancing out the electrical characteristics of the instrument itself, very delicate pH measurements can be obtained.

For many practical purposes, pH measurements of sufficient accuracy for processing can be made with compound indicators that change color quite definitely over the entire pH range. Test papers that cover the entire range of pH are useful and available from most chemical supply houses.

The electrometric method is the most highly developed and accurate way to check pH and is not affected by color or turbidity, which affect colorimetric methods seriously. This versatility makes the electrometric method most valuable.

Table I

Hydrogen-Ion Concentration Scale

pH value		Intensity of acidity or alkalinity	
0	Acid	10,000,000	
1		1,000,000	
2		100,000	
3		10,000	
4		1,000	
5		100	
6		10	
7	Neutral	1	(= H^+ ions to 10^{-7} = (OH^-) ions to 10^{-7})
8	Alkaline	10	
9		100	
10		1,000	
11		10,000	
12		100,000	
13		1,000,000	
14		10,000,000	

Table II

Indicator	Range of change in pH	Color: Acid	Color: Alkaline	Concentration in %	Number of drops
Methyl Violet	0.1 to 3.2	Yellow	Violet	0.05	3 to 8
Tropaelone OO	1.3 to 3.2	Red	Yellow	0.01	1 to 5
Dimethyl yellow	2.9 to 4.0	Red	Yellow	0.01	5 to 10
Methyl orange	3.1 to 4.4	Red	Orange yellow	0.01	3 to 5
Methyl red	4.2 to 6.3	Red	Yellow	0.02	2 to 4
Neutral red	6.8 to 8.0	Red	Yellow	0.01	2 to 5
Phenolphthalein	8.2 to 10.0	Colorless	Red	0.05	3 to 20
Thymolphthalein	9.3 to 10.5	Colorless	Blue	0.04	3 to 10
Alizarine yellow	10.1 to 11.1	Yellow	Lilac	0.01	5 to 10
Alizarine-sodium sulfonate	10.0 to 12.0	Red brown	Pale yellow	0.01	4 to 16
Tropaeoline O	11.0 to 13.0	Yellow	Orange brown	0.01	5 to 10

The number of drops indicates the amount of indicator to be added to 10 c.c. of the solution under test.

Courtesy "The Ciba Review" No. 112, Ciba Co., Basle

THESE DYES are sufficiently sensitive to changes in pH to be useful in checking many textile processes. Colorimetric methods fail in oxidizing, reducing, or highly colored solutions and are replaced by electrometrc methods.

Continuous Bleaching With Silicate-Free Peroxide

By **B. K. EASTMAN** and **P. FELDMAN**, in TEXTILE WORLD

Sodium silicate has long been recognized as the outstanding stabilizer for alkaline hydrogen-peroxide solutions used in bleaching cottons; but with the advent of continuous bleaching, several drawbacks to sodium silicate developed.

These drawbacks included a tendency to form scale that is deposited on the surface of equipment and the difficulty in washing silicate from the cloth. These difficulties created serious problems in many mills, particularly mills handling sheer fabrics or bleaching cloth prior to dyeing. Defects such as abrasion marks and broken yarns and interrupted production resulted.

Phosphates can replace silicates for formulating stabilized peroxide solutions that do not cause such difficulties. Calcium phosphate is the preferred ingredient for the stabilization. Insoluble in water, the calcium phosphate is formed within the saturator and on the cloth by introducing to the saturator a solution of disodium phosphate buffered with borax. The concentration of disodium phosphate in the saturator can vary over a fairly wide range.

Cotton and water will usually supply sufficient calcium. To be on the safe side, particularly if the cloth has been scoured or if water of zero hardness is used, a small quantity of calcium-chloride solution is continuously added to the saturator.

The pH of the saturator solution is critical and will vary from plant to plant depending on the type of material, treatment prior to bleaching, alkali carry-over, temperature in J-boxes, and end use.

Batch- and continuous-dye results have been highly satisfactory on thousands of yards of cotton cloth bleached by the nonsilicate process.

The new system offers the following advantages: recovery of production previously lost while scale was cleaned from equipment, reduction of seconds and rejects resulting from scale, and elimination of dye troubles caused by silicate compounds left in cloth.

METALLIC-YARN WET-

CONSTRUCTION OF PRINCIPAL TYPES OF METALLIC YARNS	How To Identify	Major Fabric-			
		Singe Desize	Scouring	Bleaching	Mercerizing
Viscose + Metal Foil + Viscose	Burn — smells like paper. Immerse in water—may delaminate. Not soluble in acetone.	May be singed. Avoid desizing if possible—may delaminate	Avoid.	Avoid.	Avoid.
Acetate-Butyrate + Metal Foil + Acetate-Butyrate	Burn — smells like rancid butter. Soluble in acetone, isopropyl acetate.	May be singed or desized by usual methods	May be scoured with mild alkalis and detergents in jigs or becks at 160 to 180° F. Avoid cresylic-acid compounds, caustic soda, heavy nips.	Use low-caustic or silica-free peroxide formulas in one-stage continuous systems; open kiers, jigs, becks satisfactory with low-alkali peroxide formulas.	May saponify film. Make trial runs.
Triacetate + Metal Foil + Triacetate	Acetone dissolves film in 30 mins. May delaminate in benzene, methyl alcohol, trichlorethylene.	May be singed or desized by usual methods.	May be scoured with mild alkalis and detergents in jigs or becks at 160 to 180° F. Avoid caustic soda, heavy nips, high tension.	Use low-caustic or silica-free peroxide formulas in one-stage continuous systems. Open kiers, jigs, becks satisfactory with low-alkali peroxide fomulas. Chlorine, chlorite, and peracetic-acid bleaches satisfactory under controlled conditions.	May saponify film. Make trial runs.
Polyester + Metal Foil + Polyester	Yarn will stretch 100 to 120%. Acetone, benzene, chloroform, trichlorethylene delaminate. Gold yarns may lose color.	May be singed or desized by usual methods	May be scoured with mild alkalis and detergents on jigs or becks at 160 to 180° a. Avoid caustic soda, heavy nips, excess tension.	Modified two-stage caustic-steam and peroxide-steam system workable; also single-stage methods. Jigs, becks, open kiers can be used with peroxide formulas. Chlorine, chlorite, and peracetic-acid bleaches satisfactory under controlled conditions.	Satisfactory under 30 to 40 secs. exposure to caustic. Wash thoroughly.
Polyester + Metallized Polyester + Polyester	Yarn will stretch 100 to 120%. Acetone, chloroform, trichlorethylene may delaminate.	May be singed or desized by usual methods.	May be scoured with mild alkalis and detergents on jigs or becks at 160 to 180° F. Avoid caustic soda, heavy nips, excess tension.	Avoid caustic soda in peroxide formulas; do not use two-stage process. Jigs, becks, open kiers satisfactory. Chlorine, chlorite, and peracetic-acid bleaches are suitable under controlled conditions.	Not recommended; may etch metal
Polyester + Metallized Polyester	Yarn will stretch 100 to 120%. Acetone, benzene, chloroform trichlorethylene may delaminate.	May be singed or desized by usual methods.	May be scoured with mild alkalis and detergents on jigs or becks at 160 to 180° F. Avoid caustic soda, prolonged scouring, heavy nips.	Avoid caustic soda in peroxide formulas. Do not use two-stage process; jigs, becks, open kiers may be used. Chlorine, chlorite, and peracetic-acid bleaches satisfactory under controlled conditions.	Not recommended; may etch metal.

PROCESSING GUIDE (Gold and Silver Types)

Processing Steps			General Comments
Dyeing	Drying	Finishing	
Fabrics containing these metallic yarns may be pad-dyed. Avoid prolonged exposure to dye liquors, such as jig or beck processes. Select colors to avoid staining viscose film.	Usual drying machines and temperatures applicable. Avoid excess tension, overdrying, stoppages.	Light cold calendering, decatizing, shrinking are feasible. Fabric design may affect results. Usual plain or water-repellent finishes may be applied in pad, or resins not requiring afterwash.	This type of metallic yarn is best suited to loom-finished fabrics or fabrics requiring a minimum of wet processing. The yarns are generally resistant to dry cleaning.
Fabrics containing these yarns may be dyed with direct, developed, acid, chrome, vat, leuco-vat esters, naphthol, and sulfur colors or with selected disperse colors at 120° F. Optimum pH 6 to 8. Suggested temperature 160 to 180°F. Avoid prolonged boiling or excess acidity or alkalinity.	All drying methods are applicable. Moderate tensions and pressures are preferred. Avoid stoppages, overdrying.	All finishing steps normal to fabric are possible. Fabric design determines final effect in some cases. Usual plain, water-repellent, or resined finishes are suitable. Cold calendering satisfactory.	This metallic yarn withstands most wet-processing steps and dyeing procedures. In dyeing acetate fabrics, choose dyes applicable at 120° F. or film may stain. All processing involving boiling, acids, or strong alkalis should be watched carefully to avoid etching, saponification, blushing, or delamination. The yarn is fast to normal laundering and dry cleaning.
Fabrics containing these yarns are dyeable by same procedures used for the butyrate-acetate yarns. Avoid excess caustic, prolonged boiling.	All drying methods are applicable, to temperatures of 330° F. Moderate tensions and pressures are preferred. Avoid stoppages, overdrying.	All finishing steps normal to fabric are possible. Fabric design may limit shrinkage, other operations. Usual plain, water-repellent, or resin finishes suitable. Cold calendering satisfactory.	This metallic yarn behaves like Arnel as regards dyes. The yarn has low stretch and is more resistant to blushing in high wet heat than the butyrate-acetate type. Can be heated to 275° F. dry heat, higher for limited cycles. The yarn is fast to normal laundering and dry cleaning.
Direct, developed, acid, chrome, vat, leuco-vat esters, naphthol or sulfur dyes are applicable; disperse dyes at 120° F. Avoid excess alkalinity. This type of metallized yarn is generally more resistant to processing than any other.	Can be dried on usual machinery at up to 330° F. Avoid excess tension and pressures, stoppages, and overdrying.	All finishing steps normal to fabric are possible. Fabric design may limit shrinkage, other operations. Usual plain, water-repellent, or resin finishes suitable. Cold calendering satisfactory.	Tough, high-stretch film with excellent chemical resistance permits more latitude in processing. Film dyes like Dacron. The yarn is sensitive to pressure combined with dry heat over 300° F. Film will not saponify with caustic, but etching of metal can occur if exposed to alkalis or acids at elevated temperature for long periods. Fast to normal laundering and dry cleaning.
Most dyes suitable for polyester-film type are applicable. Care should be exercised in use of caustic, copper, mineral acids. This type etches more readily than foil-bearing types.	Can be dried on all usual machines at up to 330° F. Avoid excess tensions and pressures, overdrying, and stoppages.	All finishing steps normal to fabric are possible. Fabric design may limit shrinkage, other operations. Usual plain, water-repellent, or resin finishes suitable. Will stand embossing, Schreinering, cold calendering.	Tough-film yarn that may be processed generally under same conditions suitable for foil-bearing type above. Because of extremely thin metallic layer, yarn is more sensitive to strong acids, alkalis, and combined heat and pressure.
Dyes suitable for polyester-film types are applicable. Avoid excess caustic or mineral acids or prolonged boiling.	Usual drying methods are applicable to 330° F. Avoid excess tensions and pressures, overdrying, and stoppages.	All finishing steps normal to fabric are possible. Fabric design may limit shrinkage, other operations. Usual plain, water-repellent, and resin finishes suitable. Will stand hot or cold calendering, Schreinering.	This yarn is light and very soft. Chemical resistance is generally excellent, but metallic layer is very thin ana more-easily etched than foil-bearing type. Avoid continued pressure and heat above 275° F. The yarn is fast to normal laundering and dry cleaning.

Finishing Nonwoven Fabrics

Nonwoven fabrics that are destined for other than disposable purposes can be dyed, printed, embossed, and finished on ordinary dyehouse equipment.

Because nonwovens as a class do not have the tensile strength or drape associated with woven fabrics, it is necessary to process them in the open width at lower tensions than can be used on woven fabrics. The end use will in most cases determine the extent of the finishing operations that will be necessary to produce the desired product.

The great bulk of nonwoven fabrics that go into interlinings, upholstery backing, insulation, and coated materials are finished when they come off the production machines on which they are formed.

Two broad classes of nonwovens can be defined. In one case the fabric is held together by an added binder. The other class of nonwovens is bound together by thermoplastic fibers mixed in the blend, which are plasticized by passing the web through heated rolls or ovens. When the web cools, the thermoplastic fibers bind the mass together.

How Color Is Added

For many purposes, color can be added to the binders that are used to hold the web together. There are limitations to coloring by this method. It is not possible to produce deep, evenly colored shades; and in some cases the binding effect is considerably reduced if large amounts of dye or pigments are incorporated in the binder solution. The hand also suffers if large amounts of pigment are added.

Nonwovens that are made of cellulosic materials bound with latices applied by immersion of the web can be dyed by adding color to the bath containing the latex emulsion, but trials should be run to note the effect of the salt content of the dyes on the stability of the latex emulsion.

Many emulsions are sensitive to the presence of even small amounts of electrolytes and will break out under the combination of electrolytic effect and mechanical action at the nip. A two-bath continuous process that uses one pad for color and a following pad for the binder emulsion will cut down the chances of emulsion breakdown.

Binders based on thermosetting resins or solutions of glue, polyvinyl alcohol, casein, or alginates are generally not sensitive to the salt content of dyes and could be expected to tolerate adequate concentrations of dye for most purposes.

Jigs or Becks Can Be Used

If deep shades of good all-round fastness are necessary for the end use of the nonwoven fabric, it is possible to dye them by conventional methods that are used for woven goods. The nonwoven fabric should be strong enough to withstand moderate tension, particularly if jig dyeing is contemplated.

In any case, tensions must be kept at a minimum; and modern jigs with spreaders are a necessity to avoid warpwise creasing. Of course it is not possible to rewet nonwovens that are bonded with water-soluble binders. Neither is it practical to attempt to get solid shades by piece-dyeing methods on nonwovens bonded with waterproof latices.

Nonwoven fabrics can be dyed in dyebecks, but the breast roll should be modified so that the web is teased out to full width and not permitted to fall into rope form. For cellulosic fibers, direct colors, sulfurs, aftertreated directs, or vats can be applied to nonwoven fabrics in becks.

Mixed-fiber nonwovens that use a thermoplastic fiber as a binder may require disperse colors or acid colors to tint the thermoplastic fibers. Acetate or nylon fibers are included in this category, as well as polyamide and polyster fibers designed especially for binding the mass of fibers together.

Where the binding fiber is present in the usual ratio of 10 to 15%, it may not be necessary to dye it as a separate operation unless a truly solid shade is required.

Drying Is Standard

Dyed non-woven fabrics can be dried in loop dryers or any other dryer in which tensions are low. Rugged webs can be tenter dried, but this method is not practical for very light webs. Tenters that are set up for and operated by personnel trained to handle conventional fabrics create more tension than most nonwoven fabrics can stand.

Considerable yardage of nonwoven fabrics is now being printed on conventional roller-printing machines. Here again excess tension must be guarded against. Pigments are largely used to produce the printed designs, but dyestuffs are practical when they are suitable for the fibers involved. Screen-printing methods are also used to decorate nonwoven fabrics.

Surface Effects Possible

Some nonwoven fabrics are designed so that they can be lightly napped to give a soft and pleasing surface.

Embossing a pattern on the fabric is a common decorative step that can be done with conventional embossing machines. Fiber content is important here because the pressures and temperatures must be adjusted to suit the fiber.

Thermoplastic fibers must not be embossed at temperatures near their melting point or at high pressure. It is possible to fuse a thermoplastic fiber at a temperature considerably below its melting point if excess pressure is applied.

Plain calendering is often used to produce glazed surfaces or to compact the fabric prior to coating operations.

How Hand Can Be Modified

The bête noire of nonwoven fabrics is poor drape at adequate breaking strength. To overcome poor drape, it is possible to work the fabrics in the open width in a dyebeck with a softener added to the bath. The mechanical effect seems to be very important in breaking down fiber stiffness. Some of the weaker bonds are broken in the process, which reduces fabric stiffness.

In addition, binders can be compounded with softening agents to improve draping qualities.

Chemical modification of the nonwoven fabric is also possible after manufacture, but this approach generally depends on degradation of the fiber and must be carefully controlled to avoid excessive loss in strength.

Coating Is Important

Nonwoven fabrics are being used in great quantities in automobile-upholstery items such as door paneling, scuff pads, and seat bolsters. Several car manufacturers are using nonwoven fabrics as backings for vinyl sheets.

The random-fiber nonwoven fabric provides strength and support to the exterior vinyl sheet and eliminates the need for heavier and costlier backing materials. Latices are used as a bonding agent in the nonwoven fabric itself, which is usually made from cotton or synthetic fibers.

Three methods are used by the converters to combine the nonwoven fabric and the vinyl sheet.

In all three methods, the nonwoven fabric adds thickness to the sheet, increases tear resistance, and aids the soft, pliable hand normally found in an unsupported sheet. The fabric still permits a desirable amount of stretch and recovery in the final structure.

Many colors of vinyl materials are used to coat the nonwoven fabrics.

One method is to apply a coating of vinyl plastic directly on to the nonwoven fabric in a calender. The vinyl dough is fed to the nip, and the distance between the rolls determines the thickness of the coating. The heated rolls fuse the vinyl and adhere it to the backing.

Preformed vinyl sheet is also applied to nonwoven fabrics in a laminating operation. In this system, the vinyl sheet is led past a bank of infrared lamps or other suitable heat source and then meets the pretreated web of fabric just ahead of pressure rolls. The hot materials are slightly fused at the point of contact to produce a secure lamination.

A great deal of nonwoven fabric is consumed in backing for quilted vinyl-faced materials that go into baby-carriage linings, table covers, and the like.

In this type of material, vinyl sheet is led over a layer of wadding that in turn lays on a sheet of nonwoven fabric. The three layers are joined at intervals when an electronically heated die is pressed down on them. Usually the pattern is in the form of lines such as are produced by stitching a conventional quilt.

The nonwoven fabric is generally all cotton bonded with a synthetic rubber.

Solvents Speed Up Vigoureux Printing

By THE WOOL BUREAU, Dept. of Science and Technology, in TEXTILE WORLD

Table 1—Composition of Printing Paste

Ingredients	For 1 liter	For 10 gals.	Remarks
For Premetallized or Acid Dyes			
Dye	20 to 80 grams	2 to 8 lbs.	
Thickener (Solvitose H4M)	40 to 50 grams	4 to 5 lbs.	Or appropriate quantity of other thickening agent
Acetic acid (100%)	30 c.c.	2½ pints	
Benzyl alcohol	50 to 100 c.c.	½ to 1 gal.	Quantity depends on amount of dye
Anionic wetting agent	5 to 10 c.c.	½ to 1 lb.	Optional
Water	850 c.c.	8½ gals.	
Print Pastes for Chrome Dyes			
Dye	20 to 80 grams	2 to 8 lbs.	
Thickener (Solvitose H4M)	40 to 50 grams	4 to 5 lbs.	Or appropriate quantity of other thickening agent
Chromium fluoride	30 to 60 grams	3 to 6 lbs.	Quantities refer to solid
Acetic acid (100%)	30 c.c.	2½ pints	
Benzyl alcohol	30 c.c.	2½ pints	
Leveling agent	5 c.c.	8 oz.	
Water	850 c.c.	8½ gals.	

TYPICAL PRINT PASTES for three classes of dyes that can be printed by the method described are given above.

Table 2—Steaming Time for Dye Fixation

Pressure Psi.	Temperature ° F.	Temperature ° C.	Time (mins.) for Premetallized dyes 20 to 30 grams per l.	Time (mins.) for Acid dyes 80 grams per l. (black)	Time (mins.) for Chrome dyes 20 to 80 grams per l.
			40 to 50	100 to 120	.....
0	212	100	12	35	60 to 90
3	221	105	10	25	40 to 50
5	227	108	8	20	30 to 40
7	232	111	6	12	20 to 30
10	239	115	4	7	10 to 15
15	250	121	3	4	5 to 10
20	259	126	2	2	2 to 3
30	274	135			

APPROXIMATE STEAMING TIMES to get 95% color fixation are listed above. Individual dyes may require more or less time to get the same results.

By using benzyl alcohol as a dye solvent and increasing the pressure at which the printed sliver is steamed, vigoureux printers can get 95% color fixation in 5 to 20 mins.

Premetallized dyes work particularly well in this method, and many acid colors can also be used. Some of the chrome dyes that are less alcohol-soluble can be worked by this procedure if a leveling agent is included in the dye paste.

How Pastes Are Made

The dye and thickener are mixed together and added to the previously mixed liquids. Typical formulations for acid, premetallized, and chrome colors are given in Table 1.

After printing, it is advisable to wrap the sliver bundles with wet covers to avoid drying out the print paste before steaming. If the paste becomes dry, there will be a considerable loss of color value; and adding hygroscopic agents such as glycerine to the print paste will not overcome the effects of drying out.

Pressure Cuts Steaming Time

Steaming the printed sliver at more than atmospheric pressure speeds up color fixation. The steam must be saturated—a normal condition in most plants—and it is important that the print paste contain a volatile acid to avoid yellowing and weakening of the wool during steaming. Table 2 gives typical steaming times for three types of dyes at various pressures.

The steaming chamber should be thoroughly heated before any actual steaming of printed sliver takes place. There is little need to reach pressures much over 3 to 5 psi. for light shades of premetallized or acid colors and 10 to 15 psi. for premetallized or acid blacks and all chrome dyes.

Steam should not be allowed to escape too freely from the steamer because both solvent and volatile acid may be lost before dye fixation is complete.

Different dyes have different rates of fixation; so the figures in Table 2 are only approximate. Many light shades will require less than the suggested time, others may need more. Some acid blacks may require more time than has been suggested.

Testing Peroxide-Bleaching Solutions

To Find Peroxide Concentration:

Add a 10-ml. sample of the bleaching solution to about 25 ml. of pure sulfuric acid diluted to about 25% strength.

Titrate the sample with 0.588 N potassium permanganate to a permanent pink color.

Each ml. of 0.588 N potassium permanganate required to reach the pink end point represents 0.1% hydrogen peroxide in the sample.

Here are other indications that can be figured from the titration:

ml. 0.588 N $KMNO_4 \times 0.1$ = percent 100% H_2O_2
ml. 0.588 N $KMNO_4 \times 0.2$ = percent 50% H_2O_2
ml. 0.588 N $KMNO_4 \times 0.286$ = percent 35% H_2O_2
ml. 0.588 N $KMNO_4 \times 0.834$ = lbs. 100% H_2O_2 per 100 gals.
ml. 0.588 N $KMNO_4 \times 1.668$ = lbs. 50% H_2O_2 per 100 gals.
ml. 0.588 N $KMNO_4 \times 2.385$ = lbs. 35% H_2O_2 per 100 gals.
ml. 0.588 N $KMNO_4 \times 0.364$ = approximate volume strength
3 ml. 0.588 N $KMNO_4$ = approximately 1 volume

To Find Alkali Concentration:

To a 5-ml. sample of the bleaching solution, add 5 drops methyl orange indicator.

Titrate with 0.10 N sulfuric acid to a clear yellow color.

Each ml. of 0.10 N sulfuric acid required to obtain the yellow end point indicates 0.667 lbs. of caustic soda or its equivalent per 100 gals. of bleaching solution.

Also:

ml. of 0.10 N $H_2SO_4 \times 0.884$ = lbs. Na_2CO_3 per 100 gals.
ml. of 0.10 N $H_2SO_4 \times 4.92$ = lbs. sodium silicate 42° Bé 1:2.5 per 100 gals. solution
ml. of 0.10 N $H_2SO_4 \times 5.800$ = lbs. sodium silicate 42° Bé 1:3.2 per 100 gals. solution

From a chart prepared by Becco Chemical Div., Food Machinery & Chemical Corp.

Pad-Dyeing Polyamide and Polyester Fibers

Low-temperature pad dyeings that are free of warp streaks are possible on polyamide-fiber fabrics.

The process is based on a water-in-oil emulsion carrying the Vialon (premetallized) colors in a solution in the water phase of the emulsion.

The basic solution of dye and emulsifying agent is made up as follows:

100 to 200 grams Lumulsol F
10 to 100 grams Vialon (premetallized) dye
Water to make 1,000 grams

The emulsifying agent (Lumulsol F) is first mixed with half its weight of water and stirred with a paddle until a smooth paste is obtained.

The mixture is put under a high-speed mixer and diluted further with a portion of the water, and the dissolved dyestuff is stirred in. The dyestuff should be cooled to 35° C. before it is added to the mix.

Dimethyl formate is added to the mix to increase dye solubility.

The mixture of dye emulsifier, solvent, and water is diluted for use by stirring in turpentine substitute.

Horizontal Pads Work Best

The emulsion is applied preferably in a pad that has its rolls mounted horizontally. The pad rolls should be made of a synthetic rubber that is resistant to petroleum-based solvents such as gasoline or benzene.

After padding, the fabric is dried in a flue dryer with heated air or by infrared units. The goods should be guided into the dryer with as few rollers as possible to prevent pick-off of the dye emulsion.

The dried goods are finally put in a steamer at 30 lbs. pressure for 20 mins.

An alternate way of developing the color is to work the dyed and dried goods on a dye jig in boiling water at pH 5 for 30 mins.

It is also possible to develop and fix the color after a preliminary drying by heat treatment similar to that used in heat setting fabrics for dimensional stability.

A variation on the water-in-oil emulsion method is based on including proprietary materials in the mix that are good dye solvents and have a swelling action on the polyamide fibers. A typical formula is:

40 to 100 grams Sesolvan NK
100 grams Texapret C
3 grams Etingal A
10 to 100 grams Vialon (premetallized) dye
Water to make 1,000 grams

The dye is dissolved in a portion of the water and the Sesolvan NK. The Texapret C is dissolved in another portion of the water, and this solution is added to the dye solution. No special precautions are necessary to get a good working mixture.

The solution works well in any conventional pad, but any rubber rolls in the system should not be gasoline-resistant because such rolls tend to swell in the presence of Sesolvan NK.

After the goods are padded, they are dried and developed as outlined previously.

How Polyesters Are Dyed

The polyester fibers can be padded with a water-in-oil emulsion similar to that used for the polyamide fibers.

A formula that has produced good results is:

10 to 150 grams Lumulsol F
10 to 60 grams Celliton (disperse) dye
Water to make 1,000 grams

The Lumulsol F is first mixed with half its weight of water. Then some more water is added to reduce viscosity; and the mix is stirred mechanically at 800 to 1,000 rpm. while the dye solution, cooled to 35° C., is added.

The viscous paste formed at this point is diluted with turpentine substitute, which is stirred in manually.

The final working solution is padded on, the goods are dried, and then they are passed through a heat-setting tenter at 215 to 220° C. to fix and develop the shade.

A final clearing treatment is given the goods by treating them for 20 mins. at 70° C. in a solution of:

2 grams per liter hydrosulfite
2 ccs. per liter 38° Bé. caustic soda
1 gram per liter Nekanil AC Special

The treatment removes unfixed color and also clears up whites.

From a paper prepared by Dr. A. Wurz, Badische Anilin & Soda Fabrik, Germany.

Dyeing Nylon By the Chemnyle Method

The Chemnyle method of dyeing is simple and requires no profound technical knowledge for its application. The filament-nylon goods are prepared conventionally. They are then treated for a period of 10 mins. in from 2 to 3% Chemnyle dyeing assistant, 2% Triton X-67, and formic acid to provide a pH of approximately 3.5.

The recommended dyestuff solution is added to the bath, and the dyeing is carried out at 190° to 200° F. After color matching, the dyeing is washed off at 160° F. If 160° F. washfastness is required, the goods should be aftertreated in the recommended fixing agent for the specific dyestuffs. Katanol 0-50 and Chromofix B are among those that have been found useful.

Chrome dyestuffs may be used to great advantage in shades ranging from light medium to black. The colors are chromed by conventional methods to give good washfastness at temperatures ranging from 160° to 212° F.

Dye Selection Is Important

The question of dyestuff selection is important, because it has been established that there are what may be classified as slow-, medium-, and fast-drawing colors; and although it is preferrable to use dyestuffs from a given classification, mixtures of slow- and medium-, and medium- and fast-drawing types are permissible.

The dyeing rates of individual dyestuffs may be entirely different under Chemnyle conditions than they would be if dyed under normal dyeing conditions.

Dyestuff selection is also very important from the standpoint of colorfastness to light and washing; and it should be pointed out that the use of the Chemnyle process is not an automatic guarantee of good fastness. The dyestuffs that have been chosen through careful research have been found to possess the listed properties.

The Chemnyle process produces wetfastness of a very high order on filament nylon. Lightfastness is equivalent to that normally produced on nylon with the types of dyestuffs listed, which are superior to disperse types. Selected chrome-type dyestuffs can be expected to give lightfastness of from 20 to 100 Fade-Ometer hours. Unfortunately, neutral-dyeing premetallized types have not been found applicable by the Chemnyle method.

Optical bleaches may be applied by the Chemnyle process.

Results obtained from the Chemnyle process show that:

1. Streakiness normally associated with dyestuffs other than disperse types has been virtually eliminated in many cases and reduced to an acceptable minimum in others.

2. Good washfastness has been obtained at 120 to 140° F., which can be boosted to 160° F. by aftertreatments. Many chrome dyestuffs yield excellent washfastness at 160° F.

3. Lightfastness is similar to normal results with acid and direct dyestuffs on nylon and ranges between 15 and 80 hrs. Selected chrome dyestuffs give lightfastness ranging from 40 to 80 hrs., depending on the shade.

4. Shades of a brilliance not normally associated with filament nylon may be obtained, and hand is improved.

From a paper presented by W. H. Hindle at a meeting of AATCC in Greenville, S. C.

New Ultrasonic Cleaning Cleans Parts Without Harm

If you need to clean delicate, precision, or hard-to-clean parts, ultrasonic cleaning may do the job for you. This new method of agitation is gaining wide application in certain types of specialized cleaning.

Agitation or mechanical force of some form is of benefit to any cleaning operation. It helps loosen soils and brings fresh detergent solutions in contact with the work.

There are many ways to agitate a cleaning solution. Pumps, air, and steam pressure are all effective.

In some cleaning tanks, the work is moved by mechanical rocker arms; in other tanks, the solution is kept in motion by propellers. A rotating cleaning barrel in another method moves both the solution and work.

Sound Waves Do the Work

The new method of agitation uses ultrasonic sound waves—sounds that human beings cannot hear.

The following explanation will (1) give you a better understanding of ultrasonic cleaning and (2) show you where it can be used to best advantage.

Sound is caused by vibration. The speed or frequency of the vibration determines the pitch of the sound. This frequency is measured in cycles per second. Sound that vibrates faster than 20,000 cycles per second is called ultrasonic, which means above the range of human beings' hearing.

This new field of harnessing fast vibrational energy is finding many applications. Some of the uses of ultrasonic cleaning to date are in smoke precipitators, laundry machines, dental drills, and equipment for detection of flaws in metal. But application to industrial cleaning promises to be one of the most important uses.

The sound waves used for cleaning are produced by transducers. These solid bodies change their dimensions when alternating current is applied to them. Current flowing through a transducer polarizes the transducer, and it becomes shorter.

When the current flow is in the opposite direction, the transducer expands to a longer size. This cycle is repeated at whatever natural frequency a given transducer material stretches and shrinks.

The make-and-break action of an electric buzzer multiplied by about a thousand times is similar to the fast natural reaction that takes place in a transducer.

When a transducer is submerged in a cleaning tank, the rapid expansion and contraction cause corresponding pressure fluctuations in the detergent solution.

On a submicroscopic scale, the liquid is torn apart and forms bubbles of cleaning liquid vapor; and then the cavities collapse. This action repeats over 20,000 times a second, or at the precise rate at which a particular transducer functions.

This cavitation or agitation in the solution occurs so fast that it cannot be seen. But its presence is proved by the effective action it has on the parts being cleaned.

What Soils Are Removed?

Ultrasonic cleaning is of greatest advantage under three conditions. It will remove difficult tenacious soils from hard-to-clean parts where scrupulous cleanliness is essential.

The difficult soils may be buffing compound, polishing rouge, lapping and honing compounds, magnetic metal powder or chips, flaw-detection compounds, and many other similar parts.

Hard-to-clean parts are parts with blind holes, internal threads, deep crevices, intricate passages, and other inaccessible areas.

Scrupulous cleanliness is necessary in many instances. For example, extreme cleanliness is sometimes necessary because of the precision of the part. At other times, a critical finishing operation follows cleaning.

There's No Danger of Breaks

Some of the items being cleaned successfully with ultrasonics are ball-bearing assemblies, hypodermic needles, clock motors, vacuum-tube parts, pipe valves, and precision parts for automobiles.

Parts are cleaned assembled or disassembled; and regardless of how fragile they may be, there is no danger of breakage.

Primarily, ultrasonic cleaning is a method to fit specific types of work, as are spray-washing machines, still or electro-cleaning tanks, steam guns, or revolving barrels.

Where parts are extremely dirty, it's best to set up a precleaning stage to remove the bulk of the soils. Some automatic systems have a spray-washing compartment for precleaning. Precleaning limits contamination of the ultrasonic cleaning solution and reduces the time required for ultrasonic cleaning.

Just as with any cleaning method, ultrasonic cleaning depends ultimately on the effectiveness of the cleaner used with it. The detergent must remove soils effectively and be safe. Other desirable qualities of the cleanser are free-rinsing, long life or the ability to resist rapid contamination, freedom from toxic fumes, and nonflammability.

Oakite Products, Inc.

Close Care of Motors Results in Top Performance

By ERNEST W. FAIR, in TEXTILE WORLD

Recognizing electric-motor troubles, correcting them speedily, and giving maintenance attention to the prevention of these troubles simplifies obtaining maximum performance from every electric motor in the mill.

Bearings that are too hot to touch or smoking may be caused by (1) a dry bearing with insufficient oil, (2) oil rings clogged by a dirty bearing, or (3) a tight bearing. On tight bearings, the bearing and shaft usually need scraping. If bearings have worked out of their slots, the bearing and shaft should be replaced.

If a shaft is out of alignment, a bearing may bind because of too much strain on the pulley. It may also loosen by vibration. If there's too much vibration, the trouble can generally be corrected by tightening the setscrews that hold the bearing in its journal housing.

Warm bearings are generally a result of an overload on the motor and heat transferred from the rotor or stator. In such instances, the load must be decreased or a larger motor used.

Smoking windings or charred wedges over the coils indicate that the bearing is worn on one side. If this defect is discovered soon enough, the bearings can be realigned or new wedges can be inserted to correct the trouble. But if the motor runs too long under these conditions, the coils have to be replaced.

When a motor fails to start, there are several reasons:

1. The voltage is too low, and there is insufficient torque. Then the voltage must be increased.

2. There's a short circuit in the stator windings caused by rough handling. The damaged coils must be replaced.

3. There's too great a load. Then the load must be reduced, or a clutch must be installed between the load and the motor.

4. Tight bearings cause friction. Bearing caps should be loosened. Then if the bearings are still too tight, they must be scraped.

Failure To Start

Failure of a motor to start when automatic controls are used is generally caused by the controls. These causes may be: (1) the solenoid is not functioning because the battery circuit is open, (2) the arms holding the circuit-breaker contacts are not working properly, and (3) the contacts are dirty or burned.

Other causes of failure to start can be detected by examining the fuses and relays, checking the starter carefully, inspecting the air gap, and removing the pulley to see if there's an overload.

Failure to start with the starter handle on and a humming sound is a frequent trouble because the starter is trying to run single-phase, an air gap is displaced, or

there is an open circuit in the stator windings.

What Causes Single-Phase?

When the motor is trying to run single-phase, one fuse is generally blown or one overload relay is out of order. Adjustment of the relay or replacement of the fuse corrects the trouble easily.

If an air gap is displaced, the bearing is out of true and should be shimmed or replaced.

An open circuit in the stator windings is caused by a short circuit that has punctured a coil or by rough handling. When a repaired motor runs with intervals of speed changes, one coil in one phase has been reversed.

When a motor starts and runs but heats while the stator is cool, the rotor bars are loose or grounded from abnormal currents in the rotor. To correct this trouble, the setscrews holding the rotor bars to the short-circuiting rings should be tightened and soldered or welded. Then the grounds should be removed.

Half-speed running on a wound-rotor motor is caused by: (1) broken connections between the windings and the collector rings, or (2) one brush is not touching, and there's an open circuit in the rotor connections. The break can be repaired, or the worn brush spring can be replaced easily.

Lagging motor speed is the result of insufficient torque caused by the rotor field in the circuit; the discharge switch is usually in the wrong position. For this trouble, the circuit between the exciter and the motor field windings should be opened. This trouble may also be caused by too great a motor load.

How To Stop Buzzing Sounds

Buzzing sounds in a motor are usually caused by a short-circuited coil or group of coils, an open circuit, or a ground. Short-circuited coils are caused by mechanical injury or broken-down insulation from over-heating. A new coil is needed. Grounds should be removed.

Burned insulation is caused by one or more coils too hot from a short circuit. The result is mechanical injury or broken-down insulation. Then the coil must be replaced.

Low growling noises are caused by a rotor out of the magnetic center of the stator. In this instance, the motor is not level or the shaft collars have shifted to leave end play on the shaft.

Variable humming sounds are usually caused by high resistance in the line (generally on long transmissions) or unstable speed of the prime mover on the alternator supplying the motor.

Use Proper Lubricant

Explosions sometimes occur in windings while a motor is running hot. The explosions are caused by dampness. Damp circulating currents between the coils, or between a coil and the ground, create a temporary ground or short circuit.

When an explosion occurs, bake the motor until all dampness is gone. Then brush the coils with a good insulating varnish. Sometimes the coils are punctured and have to be replaced.

A great deal of electric-motor trouble can be eliminated by using the highest-grade oil in sleeve bearings and the best grease in roller or ball bearings. Many motor troubles come from improper oil.

Power-Factor Correction

Existing power factor	Corrected power factor					
%	100%	95%	90%	85%	80%	75%
50	1.732	1.403	1.247	1.112	0.982	0.850
52	1.643	1.314	1.158	1.023	0.893	0.761
54	1.558	1.229	1.073	0.938	0.808	0.676
55	1.518	1.189	1.033	0.898	0.768	0.636
56	1.479	1.150	0.994	0.859	0.729	0.597
58	1.404	1.075	0.919	0.784	0.654	0.522
60	1.333	1.004	0.848	0.713	0.583	0.451
62	1.265	0.936	0.780	0.645	0.515	0.383
64	1.201	0.872	0.716	0.581	0.451	0.319
65	1.168	0.839	0.683	0.548	0.418	0.286
66	1.139	0.810	0.654	0.519	0.389	0.257
68	1.078	0.749	0.593	0.458	0.328	0.196
70	1.020	0.691	0.535	0.400	0.270	0.138
72	0.964	0.635	0.479	0.344	0.214	0.082
74	0.909	0.580	0.424	0.289	0.159	0.027
75	0.882	0.553	0.397	0.262	0.132	
76	0.855	0.526	0.370	0.235	0.105	
78	0.802	0.473	0.317	0.182	0.052	
80	0.750	0.421	0.265	0.130		
82	0.698	0.369	0.213	0.078		
84	0.646	0.317	0.161			
85	0.620	0.291	0.135			
86	0.594	0.265	0.109			
88	0.540	0.211	0.055			
90	0.485	0.156				
92	0.426	0.097				
94	0.363	0.034				
95	0.329					

Table values x kw. load = kva. of capacitors needed to correct from existing to desired power factor.

Typical problem: With a load of 500 kw. at 70% power factor, find the kva. of capacitors required to correct the power factor to 85%.

Solution: From the table, select the multiplying factor 0.400 corresponding to the existing 70% and the correcting 85% power factor—0.400x500 = 200 kva. of capacitors required.

Courtesy Westinghouse Electric Corp.

Load for Transformers

Full-load line amperes for three-phase transformers or loads

Kva.	Volts						
	208	240	480	600	2,400	4,160	13,200
1.5	4.16	3.61	1.80	1.44	.....	.....	.....
3	8.33	7.22	3.61	2.89	0.72	0.42	0.13
5	13.88	12.03	6.01	4.81	1.20	0.69	0.22
7.5	20.82	18.04	9.02	7.22	1.80	1.04	0.33
10	27.76	24.06	12.03	9.62	2.41	1.39	0.44
15	41.63	36.08	18.04	14.43	3.61	2.08	0.66
25	69.39	60.14	30.07	24.05	6.01	3.47	1.09
37.5	104.09	90.21	45.10	36.08	9.02	5.20	1.64
50	138.78	120.28	60.14	48.11	12.03	6.94	2.19
75	208.17	180.42	90.21	72.16	18.04	10.41	3.28
100	277.56	240.56	120.28	96.22	24.06	13.88	4.37
150	416.34	360.84	180.42	144.33	36.08	20.82	6.56
200	555.12	481.12	240.56	192.44	48.11	27.76	8.75
300	832.68	721.67	360.83	288.66	72.17	41.63	13.12
400	1,110.25	962.23	481.11	384.87	96.22	55.51	17.49
500	1,387.81	1,202.79	601.39	481.09	120.28	69.39	21.87
750	2,081.71	1,804.19	902.09	721.64	180.42	104.09	32.80
1,000	2,775.62	2,405.58	1,202.79	962.19	240.56	138.78	43.74

For single-phase transformers or loads, multiply the above three-phase values by 1.73.

Example: A 5-kva. single-phase transformer has a line current of 12.03 x 1.73 = 20.8 amps. at 240 v. when operating at full load.

Courtesy Westinghouse Electric Corp.

Standardize Conveyor Belts

If several conveyors are used in a plant, it is desirable to standardize on one construction for each of the belts used. This practice will simplify the problem of keeping spare belting on hand.

Courtesy McGraw-Hill Plant Engineering Handbook

Constants for Electrical Calculations

Anyone can use this table to solve plant electrical problems without a slide rule or laborious pencil work. With it, you will get accurate solutions in seconds.

Example: How many amperes per phase is it possible to draw from a transformer rated at 100 kva. 3-phase, 120/208 v.?

Solution: Table gives constants for finding unknown electrical units in terms of known ones. Using the formula I (= kva. x 1,000) ÷ (1.73 x E), for a three-phase installation, 85% pf., we find that the work can be simplified to merely multiplying the known kva. by a constant in the table. Constant is 2.779 for 208 v. Multiplying, we get 2.779 x 100, or 277.9 amps. per phase.

Wm. O'Brien in Power

3-Phase 85% pf. 80% Efficiency				11 Kv.	2.3 Kv.	480 V.	240 V.	220 V.	208 V.
$I = \frac{Kw. \times 1{,}000}{1.73 \times E \times Pf.}$		Kw.		0.062	0.296	1.417	2.834	3.091	3.269
$I = \frac{Kva. \times 1{,}000}{1.73 \times E}$		Kva.		0.053	0.251	1.204	2.408	2.627	2.779
$Kw. = \frac{I \times E \times 1.73 \times Pf.}{1{,}000}$	OR	I	TIMES	16.176	3.382	0.706	0.353	0.324	0.306
$Kva. = \frac{I \times E \times 1.73}{1{,}000}$		I		19.030	3.979	0.830	0.415	0.381	0.360
$Hp. = \frac{I \times E \times 1.73 \times Eff. \times Pf.}{746}$		I		17.346	3.640	0.757	0.378	0.347	0.328
$I = \frac{Hp. \times 746}{1.73 \times E \times Eff. \times Pf.}$		Hp.		0.058	0.275	1.322	2.642	2.882	3.049
2-Phase 4 Wire 85% Pf. 80% Efficiency				11 Kv.	2.3 Kv.	550 V.	440 V.	240 V.	220 V.
$I = \frac{Kw. \times 1{,}000}{2 \times E \times Pf.}$		Kw.		0.053	0.256	1.070	1.340	2.451	2.674
$I = \frac{Kva. \times 1{,}000}{2 \times E}$		Kva.		0.045	0.217	0.909	1.136	2.334	2.273
$Kw. = \frac{I \times E \times Pf. \times 2}{1{,}000}$	OR	I	TIMES	18.700	3.910	0.935	0.748	0.808	0.364
$Kva. = \frac{I \times E \times 2}{1{,}000}$		I		22.000	4.600	1.100	0.880	0.480	0.440
$Hp. = \frac{I \times E \times 2 \times Eff. \times Pf.}{746}$				17.775	4.193	1.003	0.802	0.438	0.402
$I = \frac{Hp. \times 746}{2 \times E \times Eff. \times Pf.}$		Hp.		0.056	0.238	0.997	1.247	2.286	2.491
1-Phase 85% Pf. 80% Efficiency				480 V.	240 V.	220 V.	208 V.	120 V.	110 V.
$I = \frac{Kw. \times 1{,}000}{E \times Pf.}$		Kw.		2.451	4.901	5.348	5.650	9.804	10.695
$I = \frac{Kva. \times 1{,}000}{E}$		Kva.		2.083	4.167	4.545	4.808	8.333	9.091
$Kw. = \frac{I \times E \times Pf.}{1{,}000}$	OR	I	TIMES	0.408	0.204	0.187	0.177	0.102	0.094
$Kva. = \frac{I \times E}{1{,}000}$		I		0.480	0.240	0.220	0.208	0.120	0.110
$Hp. = \frac{I \times E \times Eff. \times Pf.}{746}$		I		0.438	0.219	0.201	0.190	0.109	0.100
$I = \frac{Hp. \times 746}{E \times Eff. \times Pf.}$		Hp.		2.279	4.571	4.961	5.271	9.142	9.973
Dc. 80% Efficiency				220 V.	110 V.	48 V.	24 V.	12 V.	6 V.
$I = \frac{Kw. \times 1{,}000}{E}$		Kw.		4.545	9.091	20.833	41.666	83.333	166.67
$Kw. = \frac{1 \times E}{1{,}000}$	OR	I	TIMES	0.220	0.110	0.048	0.024	0.012	0.006
$Hp. = \frac{I \times E \times Eff.}{746}$		I		0.236	0.118	0.051	0.012	0.013	0.0064
$I = \frac{Hp. \times 746}{E \times Eff.}$		Hp.		4.239	8.477	19.427	33.304	77.708	155.42

Stop Electrical Fires

Electricity improperly used starts more fires in industrial plants than anything else. Half the damage from electrical fires can be prevented by periodic equipment inspections and, at longer intervals, by dismantling the equipment to check every detail likely to cause trouble.

The expense of such a program is small when measured against the consequences of an electrical breakdown and fire.

Checklist Prevents Fires

Good maintenance to prevent fires involves:

1. Keeping equipment clean and dry
2. Checking periodically for signs of overheating
3. Lubricating regularly with the proper type and amount of lubricant
4. Keeping protective devices in operating condition
5. Making sure the ratings and settings are correct
6. Setting up a maintenance schedule for important equipment

Records of inspections should be kept. They will indicate when repairs or a general overhaul are needed. Insulation tests may show that failure is imminent; then repairs can be made at the most-convenient time rather than under emergency conditions.

The inspector should be a competent electrician familiar with equipment manufacturers' instructions. He should also be aware of the need for special equipment and safeguards in hazardous locations. His equipment should include instruments, gauges, tools, and accessories required to make all necessary tests.

Wiring Failures Lead

Wiring failures are the most-frequent cause of electrical fires. Time and temperature deteriorate insulation. Continued severe loading of circuits produces overheating and causes insulation breakdown much sooner than normal.

Vibration from equipment can loosen connections or abrade insulation; overheating or short circuits result and ignite the insulation or nearby combustibles. Constant checking is needed where vibration is severe.

Sometimes equipment is unexpectedly exposed to high humidity, wetness, oily or corrosive materials, or abrasive or conducting dusts. All these conditions cause insulation to deteriorate rapidly.

Important wires or cables having combustible insulation, and grouped closely together, are especially dangerous. An arc or ground can start a fire that quickly involves all the circuits. Combustible cables should not be grouped closely together unless they are wrapped with asbestos tape and coated with a sodium-silicate solution. Cable can be bought with a fire-resistant outer braid. Grouped lead-sheathed cables burn as readily as the ordinary rubber-covered conductors because the lead quickly melts and offers no protection.

Motor Fires Come Next

Motor fires are next in frequency. Short circuits or grounding of windings occur as a result of insulation breakdown. These failures are caused by excessive vibration, oil leaking from bearings, conductive or abrasive dusts, sharp metal chips, excessive current from lighting surges or poor switch contacts, or brittleness and cracking due to age.

Many motor fires are the result of single-phasing. In a three-phase circuit, a blown fuse or a poor switch contact will cause the phase that remains in service to use more current and overheat; and eventually the windings burst into flame. If the motor is provided with appropriate running overcurrent protective devices, such fires cannot occur.

In switches or controllers, loose or worn contacts may overheat and start to arc; the result is that the covers blow open and shower the vicinity with globules of molten metal.

Electric lights should be inspected periodically to make sure protective glass globes and wire guards are in good condition. This inspection is particularly important where flammable liquids or combustible fibers are present.

Equipment Must Be Right

Other general classes of equipment such as generators, transformers, circuit breakers, and lighting arrestors operate over long periods without giving any trouble; however, scheduled periodic inspections are important because failures could cause unusually serious power interruptions.

Fire safety actually starts with the design of the equipment itself. Purchase only equipment approved by recognized testing laboratories or produced by reliable manufacturers. Install it in accordance with accepted electrical codes. Use special equipment for hazardous locations. Operate the equipment with reasonable care. And finally, inspect and maintain the equipment properly.

Courtesy Factory Mutual Record

Heat-Transfer Apparatus

In modern power plants, surface-type condensers are used since they provide pure condensed steam for boiler feed water. A study of surface condensers serving 10,000-kw. and larger turbine-generator units installed during the past several years indicates:

1. The average difference between the temperature corresponding to the exhaust absolute pressure and the cooling-water inlet temperature is 22° F.
2. A cleanliness factor of 85% is used with more than 85% of the condensers.
3. Divided water boxes are used on approximately two-thirds of the condensers.
4. The tubes used on approximately two-thirds of the condensers are ⅞-in. outside diameter.
5. Two half-capacity circulating pumps, two full-capacity condensate pumps, and a twin-element two-stage air-ejector unit are used on nearly all these condensers.

Surface condensers serving smaller units are much the same, but the divided water boxes are considerably smaller. Tubes of ¾-in. outside diameter are used on most of the smaller units, and many of the units have only one circulating pump. Some of the units have only one condensate pump.

Closed Feed-Water Heaters

With higher steam pressures and temperatures for turbine-generator units, more closed feed-water heaters are used in the cycle. The heaters below the boiler feed pumps are normally designed for 5° F. terminal difference, and those above 5° F. are designed for somewhat lower terminal difference. If an appreciable amount of superheat is available, the higher-pressure heaters may use desuperheated sections. Drain cooling may often improve the cycle economy and may be either separate units or integral with the heaters.

Make-up evaporators vary in capacity from 2 to 5% of the turbine steam flow. The evaporator is usually placed about the midpoint in the feed heat cycle and is required to produce make-up with the purity of one part per million when the shell concentration is not greater than 1,000 parts per million.

Courtesy Westinghouse Electric Corp.

Selecting Conveyor Systems

The basic rules in selecting any type of conveyor system are:

1. Gravity is the most economical motive force that can be used.
2. Equipment built for motion should be kept in motion; idle equipment is expensive.
3. Continuous movement of material is more economical than intermittent movement.
4. Handling cost is generally proportional to the size of load handled.

For equipment cost to be justified it must perform one or more of the following functions:

1. Increase production
2. Reduce production cost
3. Conserve human energy
4. Increase safety.

C. H. Wolf, Dow Chemical Co., at the Seventh National Materials-Handling Exposition & Conference.

Maintenance of Hardwood Floors

Newly laid floors should be scraped or sanded lengthwise with the grain. Use No. 2 or 2½ sandpaper for cutting off high spots and joints; use No. 1 for the second cut. Finish the sanding job with No. O or OO sandpaper, or with both. This final sanding step is the most important of all because the finest finish cannot make a poorly sanded floor look good.

How To Finish a Floor

In applying finish to a floor, carefully follow the instructions given by the manufacturer of the finish. Through his own tests and experience, he knows: (1) how to prepare the floor for finishing, (2) how the finish should be applied, (3) how many coats are required, (4) how long each coat should be allowed to dry, (5) how a stained effect can best be obtained, (6) how the finished floor should be cleaned, and (7) how and when the floor should be refinished.

Follow the finish manufacturer's instructions and you can be sure of having a floor that: (1) will be easy to service, (2) will have the best appearance, and (3) will be easily kept clean and in the proper condition at the lowest possible cost.

When you ask your floor-finish manufacturer for information, be sure to mention (1) the type of building, (2) the type of floor—maple, beech, or birch—and (3) whether the floor is old or new.

Finish All Hardwood Floors

All hardwood floors should be given some kind of finish. A proper finish, correctly applied, improves the appearance of the floor and makes scrubbing unnecessary. And elimination of scrubbing adds to the life of the wood.

Modern methods of cleaning maple floors have been simplified and made cheap through buffing with steel wool, usually with electrically driven equipment. Smoother floors result; and the smoother the floor, the easier it is to clean. Floor seals can be applied and buffed in with this equipment.

What Is a Good Finish?

The requirements of a good floor finish include:

1. The finish must penetrate the top surface of the wood.
2. The finish must seal the pores to keep out dirt and resist soil stains.
3. The finish, with its penetrating qualities, must not darken the wood.
4. The finish must reflect light to improve illumination.
5. The finish should not be slippery.
6. The finish must not mar, scratch, or flake off.
7. The finish must be of such quality that worn spots can be touched up without completely refinishing the floor.
8. The finish (sealer) should be resistant to water.
9. The finish, after application, must not present a maintenance problem. It must insure economy in maintenance to eliminate constant resanding and complete refinishing.

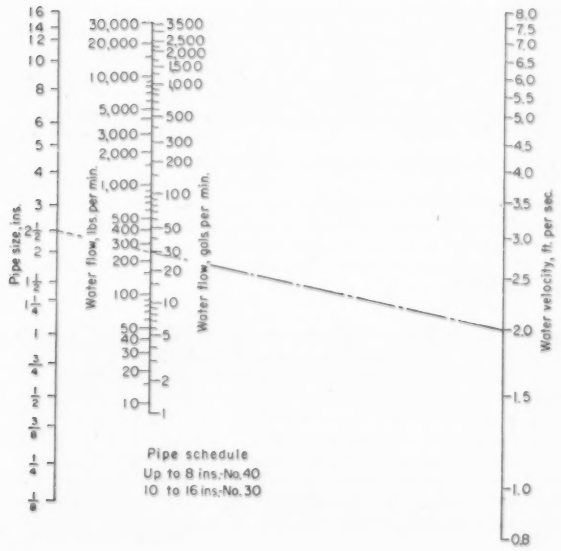
Courtesy Maple Flooring Manufacturers Assn.

Calculating Water Flow In Standard Steel Pipelines

Example: With a water velocity of 2 ft. per sec. in 2½-in. steel pipe, find the gallons per minute transported through the line.

Solution: Find the 2½-in. pipe size on the left-hand scale. Connect this point to the 2-ft.-per-sec. point on the right-hand scale with a straightedge. On the center scale at the intersection with the straightedge, find a reading of 30 gals. per min.; the adjacent scale shows this reading is equal to 250 lbs. per min. Multiplying the 250-lbs.-per-min. figure by 60 (mins. per hr.) gives an equivalent flow of 15,000 lbs. per hr.

A. J. Jackson in Power.


Pipe size, ins.
Water flow, lbs per min.
Water flow, gals per min.
Water velocity, ft. per sec.
Pipe schedule
Up to 8 ins.-No. 40
10 to 16 ins.-No. 30

Selecting Supports for Shafting

Bearings for mechanical transmission of power must be supported properly and substantially. Pillow blocks and hangers are two common types of supports. Pillow blocks are usually used for head shafts and individual driving. Hangers are generally used for line shafting, countershafting, and jack shafting of the modern group-drive system.

Pillow block has become another name for bearing, but it really is a housing for the bearing. The solid or split journal box is practically the only type of pillow block where the housing and bearing are integral.

The choice of the best type of pillow block to be used for a given application is governed by (1) the size and speed of the shaft, (2) amount and type of load to be carried, (3) atmospheric and mechanical conditions, and (4) accessibility and provisions for making adjustments for misalignment, expansion or wear. Other factors to consider are space limitations, first cost, replacement cost, ease of replacement, and servicing facilities.

Plates Ease Adjustments

To make alignment of pillow blocks easy, base plates with provisions for adjustment in one or two directions are available. Base plates to be used with floor stands are also available. Wall-bracket supports can be used when the pillow blocks must be carried a distance from a wall to provide clearance for pulleys, gears, etc.

Sling-type hangers with two-way adjustment can be used to support pillow blocks from a ceiling. If a shaft must operate through a wall, a base plate with two-way adjustment can be used with a steel-arch wall-box frame. The arch supports the masonry or brickwork around the opening made in the wall.

If the wall is not used for a support, the masonry around the opening can be supported by a thimble. Usually thimbles are split and are made of cast iron or sheet steel. When thimbles are installed carefully, they support the masonry, and in addition, set up barriers to the passage of fumes, fire, and dirt.

Two kinds of drop hangers are available for modern group systems of power transmission: (1) the ball and socket, or two-point suspension, and (2) four-point suspension. The four-point suspension is being used most at present.

Courtesy Power Transmission Council, Inc.

Care of V-Belts

While a V-belt does not depend on tension to provide its grip, it is dependent on tension for the extent of its grip. Fig. 1 shows how inadequate tension allows a V-belt to hang down away from the bottom of a sheave to reduce the arc of contact.

On the other hand, Fig. 2 shows a properly taut V-belt wrapped around the sheave in a full arc.

The area of V-belt contact is important because horsepower ratings for the different sizes of V-belts are based on a 180° arc of contact. But this arc varies slightly from one drive to the next, and allowance is made for the variation when the drive is engineered.

So when a properly engineered drive is delivered to you, it is assumed that proper tension and a proper contact arc will be maintained. Otherwise, slip is apt to develop.

When one or two V-belts in a set have become worn or damaged, the remaining belts have stretched beyond their original strength. This condition tends to throw the bulk of the load on new, shorter, and stronger-gripping belts added to the set. The new belts will overwork and last only a fraction of their normal life. When one or more belts have to be replaced, always replace the full set.

Maintain Proper Tension

Sometimes the lack of sufficient tautness in a drive causes all its V-belts to slip, but more often only a few belts slip to intermittently overload the gripping belts. Conversely, a loose belt occasionally whips taut across the tension side of the drive and hogs the load.

Most stretch that occurs during the life of a set of V-belts take place during the breaking-in period. However, drives should receive regular follow-up inspections for proper tension.

On drives lacking proper tension, the slack belts have a whipping action at peak loads and when the motor is started. A loose V-belt will stretch more in service than a tight one.

Don't be afraid to pull V-belts tight; stretching them slightly in adjusting tension is good for them. If you have no equipment for measuring tension in terms of pounds of pull, use this rule: a slack V-belt feels dead when you thump it with your hand; a properly taut V-belt is springy.

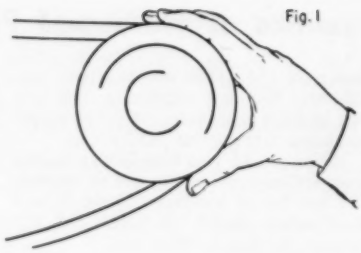


Fig. 1

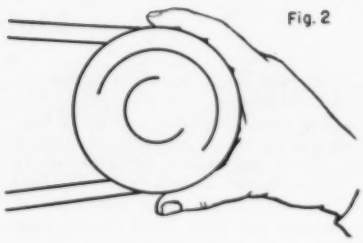


Fig. 2

Maintain Proper Alignment

A flat belt depends on tight frictional contact for its grip; a V-belt produces its own grip in the sheave. While traveling in a relatively straight line between sheaves, a V-belt has straight sides. But when it rides into the groove of a sheave and bends as it begins to circle the sheave, the bend bulges the sides of the belt; this action produces high-pressure contact between the belt and the side walls of the groove.

For this reason, one of the most important maintenance jobs is to keep the side walls of sheave grooves perfectly straight. When walls are worn out of straight, the gripping power and efficiency of V-belts is greatly reduced.

Another reason it's necessary to maintain proper alignment is that shafts of the driving and driven sheaves out of parallel draw the V-belts on one side of the set tighter, and they pull more than their share of the load.

Sheaves out of alignment also subject belts to needless rubbing on their sides; this condition wears the belt covers and builds up harmful heat.

Fig. 3 shows how to align sheaves with a cord when a straightedge is not available. A light strong cord secured around the shaft of Sheave A and stretched tight along the sides of both sheaves will touch all points indicated by the arrows if the sheaves are in perfect alignment.

Be sure the cord is held straight and tight and that it barely touches the sheaves at the indicated points. Rotate each sheave through half a turn to check the alignment. If the inner rim of either sheave indicates misalignment, it must be corrected promptly to obtain long belt life

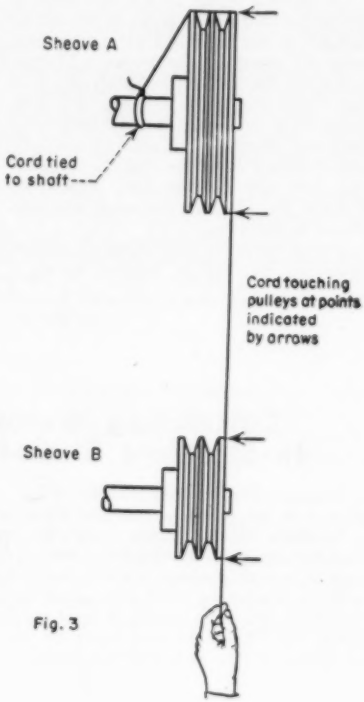


Fig. 3

Courtesy Allis-Chalmers Mfg. Co.

Avoid Trap Leaks

A careful and periodic check of valves, traps, unions, fittings, and other items can save you thousands of dollars every year.

It takes a maintenance man only a few minutes, or an hour at most, to repair the average leak. But a small leak (⅛-in. size, 160 psi.) can cost $750 in one year's operation even if it requires a full day to repair it. Say a maintenance man's salary is $20 per day and material to repair a leak is $5; then your company gains $725. Remember, too, the leak will be repaired eventually; so there's no reduction in the final cost of repairs.

Steam, water, air, and other gases and liquids carry a certain amount of impurities. When the gas or liquid is forced through a small orifice, these impurities act as an abrasive.

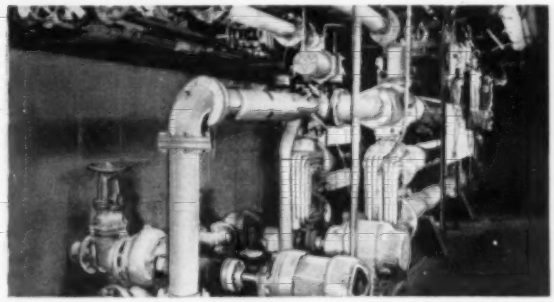
If the leak is in cast iron, wrought iron, etc., the hole grows and repairing the leak becomes an even more costly job. If the leak is through steam traps or valves, etc., the valve seats are scored soon and only replacement will eliminate the trouble.

Many companies have trained their employees to watch for all leaks and to report them immediately. Training employees is done with posters, movies, company papers, and verbally. When leaks are reported, they're repaired as soon as possible.

Courtesy Lunkenheimer Co.

LUDELL'S FORMULA FOR INCREASING PROFITS IN YOUR PLANT*

Important contributions have been made to your industry by the Bready System of Heat Recovery. The efficient preheating of incoming fresh water for process use has been reflected in lower fuel bills, reduced steam demand and increased production with these Systems.



Here's how preheating incoming process water with a Bready System can cut costs, improve production and increase profits for you:

REDUCES WATER HEATING LOAD BY 50% TO 60% AND INCREASES WATER HEATING CAPACITY WITH LESS FUEL COST.
**Example:* Original heating load from 40° to 180°F. Preheating to 120° with a Bready System leaves only 60° rise required by heater, thus making heater capable of increasing volume and still use less steam. With this System you can get the volume of hot water you need, when you need it and at the constant temperature you require.

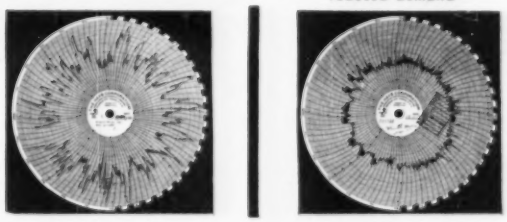
CONSTANT SUPPLY OF HOT WATER MEANS INCREASED PRODUCTIVE CAPACITY.
**Example:* Ample supply of hot water with instant delivery at uniform controlled temperature reduces filling and processing time, gives more rounds per shift and also helps maintain quality standards.

BOILER LOAD REDUCTION INCREASES "SIZE" OF PRESENT BOILER.
**Example:* Boilers must be sized to handle peak loads of plant. The Bready System levels off the peaks and reduces the average steam demand, resulting in less fuel consumption and more efficient boiler operation. This often eliminates the necessity of purchasing another boiler.

CONTINUOUS MAXIMUM HEAT RECOVERY RESULTS IN IMPORTANT FUEL DOLLAR SAVINGS.
**Example:* Temperature rise of incoming water is guaranteed to be continuous with a Bready — not just an initial reading. Value of recovered heat is reflected in lower fuel consumption and increased hot water supply.

STEAM CHART BEFORE
Note surges of peak loads

STEAM CHART AFTER
Note uniformity and reduced demand



BREADY SYSTEMS MAINTAIN THEIR PEAK EFFICIENCY.
Because Bready equipment is automatically self-cleaning, there is no decline in the amount of heat reclaimed. Exclusive, patented continuous tube feature and timed backflushing eliminate plugging and fouling. No mechanical screening devices are required.

TIMED BACKFLUSHING AND CONTINUOUS TUBES
Exclusive self-cleaning feature assures peak efficiency.

TWO VITAL POINTS TO DETERMINE.
Before purchasing any waste heat recovery equipment, find out:

1. Has actual in-plant performance proved equipment will not plug or stop up?
2. Is the system guaranteed to recover heat continuously (not just initial reading)?

LUDELL OFFERS BREADY SYSTEMS PURCHASED FROM SAVINGS.
Payments may be established by accurate metering device, if desired, to positively evaluate heat recovered. Terms are arranged to suit your requirements.

IF THIS HEAT RECOVERY PROFIT POTENTIAL IS NOW ESCAPING DOWN YOUR SEWER, NOW IS THE TIME TO ASK LUDELL ENGINEERS TO SURVEY YOUR PLANT TO DETERMINE THE APPLICATION OF A BREADY SYSTEM. THERE IS NO OBLIGATION.

LET US PROVE THAT "OUT OF WASTE . . . COMES PROFIT."

WRITE FOR ILLUSTRATED BOOKLET. This booklet contains factual information which should be in every plant engineer's data file.

Ludell
Manufacturing Company
5200 West State Street • Milwaukee 8, Wis.
Representatives in the United States, Canada, Alaska

MANUFACTURERS OF BREADY SYSTEMS OF HEAT RECOVERY AND HOT WATER HEATING • WATER HEATERS • STORAGE TANKS • WHEELER SELF-UNLOADING WASHER

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SONOCO
PAPER CARRIERS
for every TEXTILE NEED

CONES

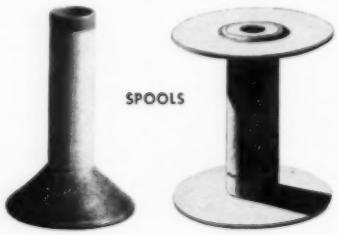
All types of paper cones for all purposes in a variety of sizes, tapers, nose construction, colors, surfaces—with or without colored tips and bases—printed, treated, perforated; all according to customer specification. Every surface and taper designed especially for the type yarn to be worked.

TUBES and CORES

All types and sizes of tubes and cores for every textile need. Convolute or spiral construction. Any practical length or wall thickness. Special treatments for strength, moisture resistance, etc. Available in colors, lacquer ends, printed, smooth surface, rough surface or plain. Up to 48" I.D.

OTHER PAPER TEXTILE PRODUCTS INCLUDE:

Underclearer Rolls
Roving Tubes
Topping Rolls and Covers
Card Clearer Roll Covers
Rayon Cake Forms
Carpet Cores
Carpet Storage Tubes
Pirns
Bobbins
And Many Others



SPOOLS

Spools for every requirement in a wide range of styles, sizes and types. Made of all fibre, or with fibre barrel and plastic heads. Single head spools available in all fibre or all plastic with various surfaces, scored and choice of colors; also lacquer tips for identification.

DUROWELD TUBES

Tubes of exceptional strength and long life are produced as a result of the Sonoco Duroweld Process. Makes micrometer tolerances and accurate balance possible, assuring perfect performance during winding and take-off operations. Certain other Sonoco products can be made by this process.

DYTEX TUBES and Plastavon Sleeves

The perfect combination for better and cleaner package dyeing and bleaching; all standard forms. Tubes are available in four colors for yarn identification, or tubes can be supplied with color rings on the ends. Plastavon sleeve protects against discoloring matter. Standard and special sizes.

FOLDING BOXES AND CARTONS

Available for immediate delivery. Nolox and Quik Set standard size boxes in assorted paper stocks. Complete design service for custom folding boxes. Four color printing available. Fast delivery on all orders.

SONOCO
Products for Textiles

1626

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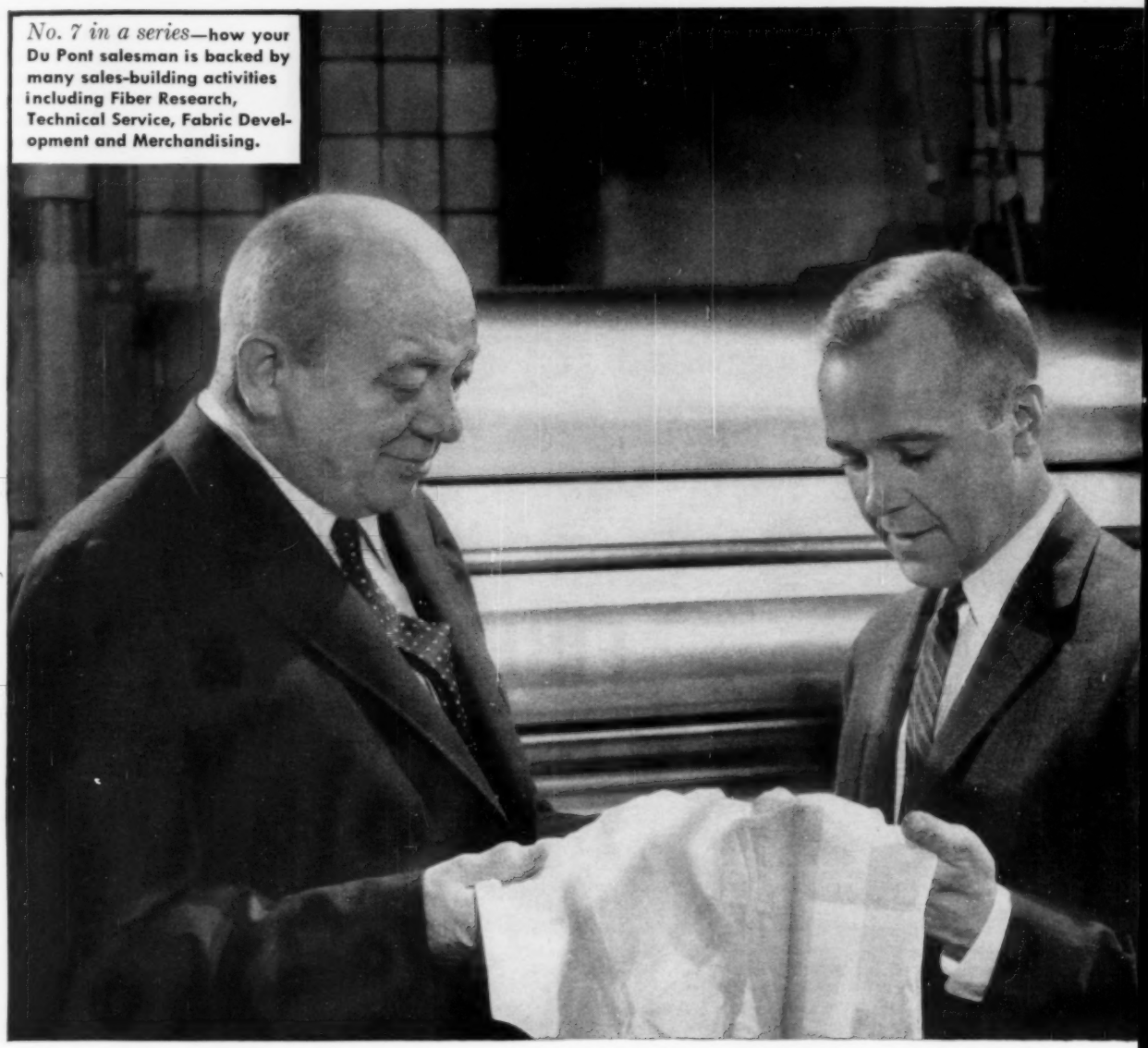
FIBERS and YARNS

No. 7 in a series—**how your Du Pont salesman is backed by many sales-building activities including Fiber Research, Technical Service, Fabric Development and Merchandising.**



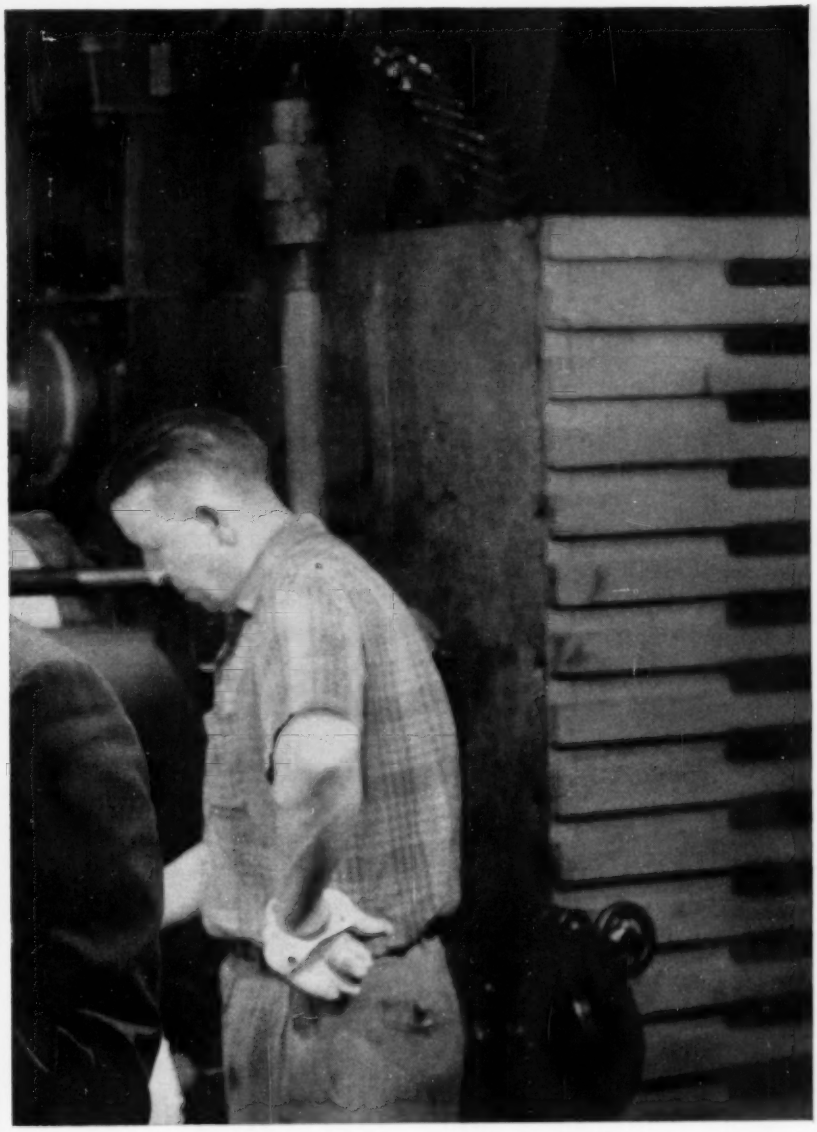
This Du Pont technician helped for finishing nylon

At left, Ralph MacIntyre, President of Joseph Bancroft & Sons Co., Inc., is seen talking with "Dutch" Sturtevant, Du Pont Technical Service representative. They're discussing a new and interesting method of finishing nylon tricot. It's a technique that may have far-reaching effects.

Developed in Du Pont's Chestnut Run Textile Research Laboratory (and made available to the tricot and lingerie industries), the process utilizes the familiar Schreiner calendering machine. Pressure and temperature adjustments are key factors.

"Dutch" played an important role in the development of this new finishing technique. He was well equipped to do so. Like many of his coworkers in Du Pont's group of 125 Technical Service men, he has a background of experience that includes intimate knowledge of specific jobs

FROM RAW FIBERS TO RETAIL SALES . . .



find a new technique tricot . . .

within the textile industry . . . the actual operation of mill machinery, for example.

This is the kind of "working know-how" that qualifies these Tech Service men to assist the industry by providing real, down-to-earth help on the processing, dyeing, finishing and use of our fibers. It's the type of assistance that the industry has found helpful whenever intricate technical problems arise.

Du Pont has always believed that the market for its fibers can best be increased by providing useful assistance to all levels of the textile industry. It's through your Du Pont salesman that you, as a customer, have ready access to a range of technical and merchandising information unique in the textile industry.

Product and Process Notes from Du Pont

Calendering Nylon Tricot—A new process for finishing nylon tricot, known as Schreiner calendering, increases covering power of tricot twofold, reduces "see-through" and eliminates extra fabric weight. A single layer of calendered tricot equals two in garments requiring double fabric shadow paneling. Heavy-knit construction used for opaque outerwear can be reduced substantially in weight, while retaining excellent covering power.

The operation consists of passing nylon tricot fabric through an engraved Schreiner calender at carefully controlled temperatures and pressures. Now, thin, lightweight fabrics can be produced with a high degree of opacity, air porosity and good bursting strength. A more effective print base can be obtained. Increased cover and the improved smoothness of calendered tricot permit a clear definition of printed patterns, allow good color register and offer more opaque backgrounds.

Detailed information about Schreiner calendering is contained in Technical Information Bulletin N-95. If you'd like a copy, write E. I. du Pont de Nemours & Co. (Inc.), Sec. G., Room 5520, Nemours Building, Wilmington 98, Delaware.

Four New Color-Sealed Acetate Shades have been developed primarily for the Fall 1958 dresswear market. These are: Empire Green, Ming Green, Sultan Red and Amberglow.

In addition, a distinct new line of colors has been assembled for the home decoration and furnishings field. Color cards, fabric color blankets and yarn samples are available through your local Du Pont Regional Sales Office.

Du Pont's No. 7 Thick and Thin Rayons, formerly produced only in deniers from 100 through 450, are now available in heavier deniers to permit broader application in home-furnishings end uses. These yarns, for example, in 900, 1800, and 2700 deniers, will impart completely new styling effects to drapery and upholstery fabrics.

Technical Information Bulletins — These Bulletins contain detailed, practical information on Du Pont product and process developments. They cover fiber properties, mill processing, dyeing, finishing and fabrication. Refer to your copies frequently; they can save you time and money. To be sure you have all the Bulletins you need—check your Du Pont salesman or Technical Service representative.

DU PONT
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Better Things for Better Living . . . through Chemistry

DU PONT BUILDS PROFITS FOR YOU

For more data, write this page number on Reader-Service card. →

Facts about COTRON*

COTRON fabrics offer these important selling advantages:

- Richer Lustre • Improved Light Fastness • Better Drape
- Whiter Goods • Brighter Colors • More Luxurious Hand
- Better Definition of Print Pattern • More Even Appearance

These are some of the many important advantages consumers everywhere are learning about COTRON, the new cotton-rayon blend. The American Viscose Corporation has embarked on a thorough promotion program that's bringing honest-to-goodness results —big 4-color double-spread national magazine ads, trade ads, complete department and specialty store promotions, window and in-store displays, dealer mat ads, statement inserts—*the whole works!*

Yes, people everywhere are getting to know about COTRON—and already they're asking for goods tagged with the COTRON tag.

Get your share of the ever-increasing demand for COTRON—investigate COTRON now!

In wash and wear, resinated COTRON compared to resinated all-cotton fabrics shows

- Greater strength after repeated laundering
- Marked improvement in strength retention after repeated laundering with chlorine bleach

The Technical & Textile Service Department of the American Viscose Corporation is pleased to make available to finishers everywhere its vast store of information, experience and know-how regarding COTRON. A competent technical representative is at hand at all times to assist finishers with their COTRON applications.

AMERICAN VISCOSE CORPORATION
350 Fifth Avenue, New York 1, N. Y.

*Trademark of the American Viscose Corporation for fabrics made of cotton and Avisco ® rayon

← For more data, write this page number on Reader-Service card.

Report from Du Pont:

Metallic yarns made with MYLAR® offer production efficiencies never possible before!

Q *Can they be run unsupported?*

A YES. "Mylar"* polyester film is 50 to 200% stronger, with 10 to 15 times the flex life of other films used for metallic yarns. Since the yarn is much stronger, breakage problems are virtually eliminated . . . your looms and knitting machines run smoothly. And only metallic yarns made with "Mylar" (metalized type) can be used with electrical stop motion devices.

Q *Can they stand up in finishing?*

A YES. "Mylar" resists solvents, water and most acids and alkalies. And because "Mylar" is heat-resistant, metallic yarns made with this durable polyester film can withstand temperatures over 300°F. You can heat-set fabrics . . . fabrics can be bleached, dyed and cross-dyed in the piece at boil.

Q *Are they more expensive to use?*

A NO. Metallic yarns made with "Mylar" often cost less than other types of metallic yarns. Because "Mylar" is strong even in thin gauges, the yield in 1,000 linear yards per pound can be 1½ to 3 times greater. Where unsupported metallic yarns made with "Mylar" are used to replace supported metallic yarns, your cost savings are even more apparent. In all cases, metallic yarns made with "Mylar" perform better in weaving, knitting and finishing.

Q *Can they withstand machine washing?*

A YES. Metallic yarns made with "Mylar" resist heat, water and most chemicals. If the other yarns in a finished fabric can withstand machine washing, drycleaning or steam ironing, so, too, can the *non-tarnishing* metallic yarn made with durable "Mylar" film.

And metallics made with MYLAR® help you sell more fabric

Metallic yarns made with "Mylar" add elegance and sales appeal to any fabric, just as metallics of old. The big difference is found in *performance*... better performance in manufacturing and better performance—meaning greater consumer appeal—in the fabric.

Metallic yarns made with "Mylar" are soft, washable and last the life of a fabric. They now come in a wide range of decorator colors. All of these important features mean greater sales appeal at the retail level.

Du Pont manufactures "Mylar" polyester film, the base material that helps make this new and highly improved metallic yarn possible. For detailed information on performance, yield and costs, check your metallic-yarn supplier. Or write today for a 20-page Du Pont booklet on facts about metallic yarn made with "Mylar".

*"Mylar" is a registered trademark for Du Pont's brand of polyester film.

Metallic Yarn made with DU PONT MYLAR® POLYESTER FILM

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Film Dept., Room TW-7
E. I. du Pont de Nemours & Co. (Inc.)
Wilmington 98, Delaware

☐ Please send your 20-page booklet on facts about metallic yarn made with "Mylar" polyester film.

☐ Please send a list with names of suppliers of metallic yarn made with "Mylar".

*Name*_____ *Title*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

*Specific interest*_____

For more data, write this page number on Reader-Service card. →

Do you know the "yes" and "no" score on *Lurex®-with-Mylar*?*

	Yes	No
Is Mylar itself a metallic yarn?	☐	☑

Mylar in itself is *not* a metallic yarn. It is a clear polyester film made by DuPont. When combined with Lurex it then becomes a metallic yarn known as Lurex-with-Mylar.

	Yes	No
Is Lurex-with-Mylar softer and more supple?	☑	☐

Dobeckmun has long experience in creating metallic yarns that are superbly soft and supple. Lurex itself is exceptionally soft and Lurex-with-Mylar is an outstanding development in this field.

	Yes	No
Does Lurex-with-Mylar clean and launder well?	☑	☐

Lurex-with-Mylar may be cleaned or laundered successfully according to the fiber with which it is woven. In itself, Lurex-with-Mylar is completely dry cleanable and commercially launderable. As certified by the American Institute of Laundering.

	Yes	No
Has Lurex-with-Mylar greater brilliance?	☑	☐

The non-tarnishing brilliance of Lurex is universally recognized. Now this high degree of brilliance is even further increased through the combination of crystal-clear Mylar with Lurex.

	Yes	No
Lurex-with-Mylar offers maximum strength with delicacy?	☑	☐

The strength of Lurex is remarkable, especially in view of its delicacy. In Lurex-with-Mylar the delicacy is maintained and the strength is greatly increased.

	Yes	No
Lurex-with-Mylar has outstanding heat resistance?	☑	☐

Mylar, used in combination with Lurex, permits the application of standard wet processing procedures with successful results . . . provides heat, abrasion and chemical resistance.

	Yes	No
Has Lurex-with-Mylar greater design versatility?	☑	☐

The unique combination of properties in Lurex-with-Mylar plus the tremendous color range of Lurex itself offers exceptional scope for design.

Lurex-with-Mylar gives you the advantage of the name your customers know, the name that is backed by consistent national advertising and strong local promotion.

The Dobeckmun Company, A Division of The Dow Chemical Company, Cleveland · New York · London · Amsterdam

Atlanta • Berkeley, Calif. • Boston • Philadelphia • Charlotte, N. C. • Chicago • Detroit
Manufacturing Affiliates in Canada: William B. Stewart & Sons Ltd., Toronto and Montreal

*T. M. du Pont

MACHINERY, EQUIPMENT, and SUPPLIES

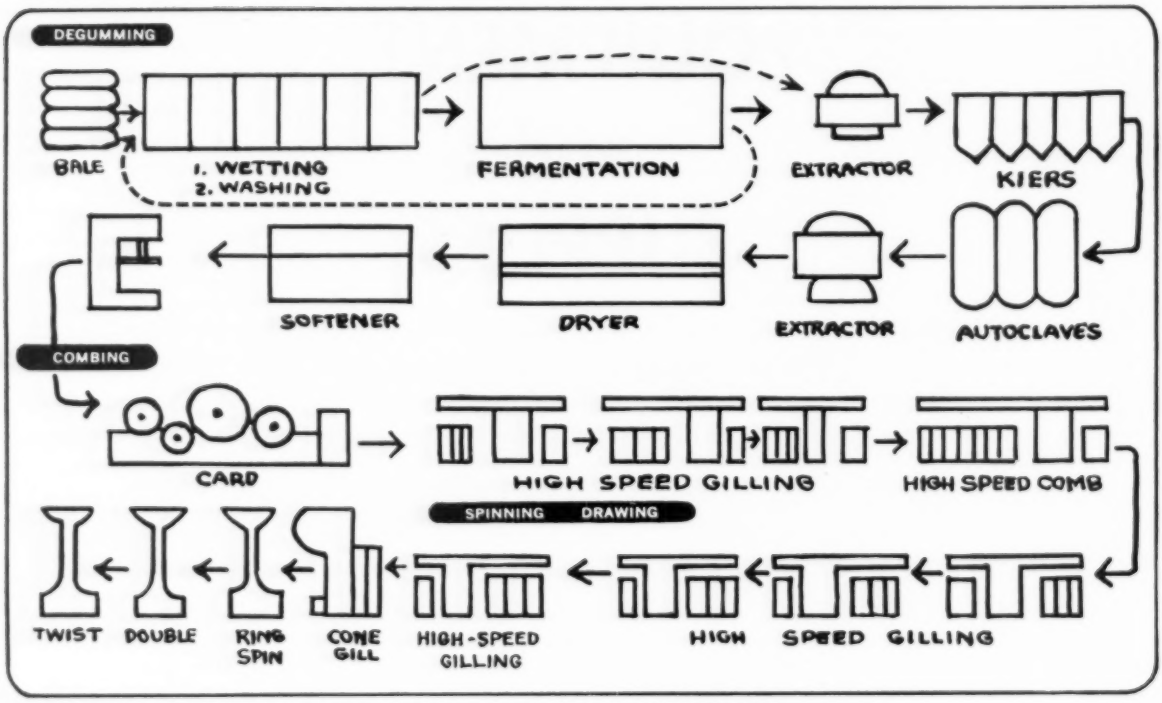
A COMPLETE LINE OF MACHINERY FOR SUCCESSFUL AND EFFICIENT PROCESSING OF

R A M I E

TO A YARN OF HIGH QUALITY IS OFFERED THIS FAST GROWING INDUSTRY BY THE

SOCIÉTÉ ALSACIENNE DE CONSTRUCTIONS MÉCANIQUES

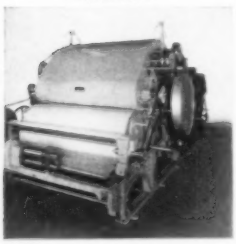
OF MULHOUSE, FRANCE WITH INTERNATIONAL SERVICE FACILITIES. COMPLETE INFORMATION IS AVAILABLE ON REQUEST. IN THE UNITED STATES PLEASE CONTACT ATKINSON, HASERICK & CO., INC., FRAMINGHAM, MASS.



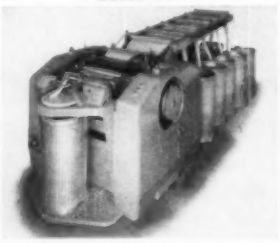
SCHEMATIC DIAGRAM OF 2 LARGE RAMIE MILLS NOW UNDER CONSTRUCTION.

PERFECT DEGUMMING IS NOW ACCOMPLISHED WITH THE MODERN SACM-FISCHER SYSTEM.

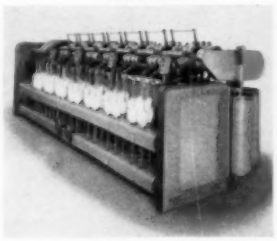
CARDING



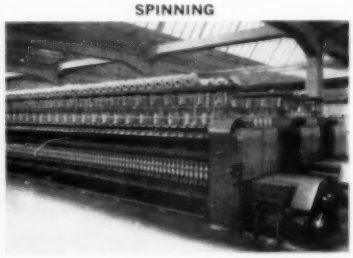
COMBING



DRAWING



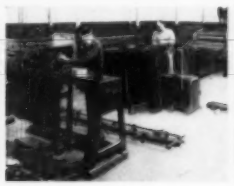
SPINNING



A FACT YOU CANNOT AFFORD TO OVERLOOK:

Platt makes and sells more textile machinery than any other manufacturer in the world.

1. Research facilities keep Platt attuned to world-wide trends.



2. Prototype shop keeps Platt machinery advanced in concept and design.

3. Mill testing program keeps Platt's higher speeds consistent with efficient operation.

4. Precision manufacturing keeps Platt machinery in operation longer.

5. Lower installed cost of Platt machinery reduces your capital requirements.

We will be pleased to quote on individual machines or assist with plant layouts for complete mills. Engineering facilities are of the highest calibre. A complete stock of supplies is carried by Atkinson, Haserick & Co., in Framingham.

Get a quotation on PLATT precision machinery

COTTON OPENING, CARDING, SPINNING AND DOUBLING MACHINERY

WASTE PREPARING, CARDING, SPINNING AND DOUBLING MACHINERY

SYNTHETICS TWISTING MACHINERY, UPTWISTERS FOR LIGHT, MEDIUM AND HEAVY PACKAGES

WOOL PREPARING, CARDING, SPINNING AND DOUBLING MACHINERY

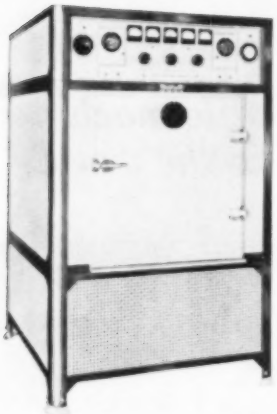
WORSTED PREPARING, CARDING, SPINNING AND DOUBLING MACHINERY

AXMINSTER CARPET LOOMS

ATKINSON, HASERICK & CO., INC.
Engineers & Agents for the World's Leading Textile Machinery
FRAMINGHAM, MASS.
336 Ridgewood Ave., Charlotte, N. C.
Greenville, S. C.—Philadelphia, Pa.

PLATT BROS. (SALES) LTD.
OLDHAM, ENGLAND
MARKETING THE TEXTILE MACHINERY MADE IN THE WORKS OF PLATT BROTHERS & CO. LTD.
HOWARD & BULLOUGH LTD. DOBSON & BARLOW LTD.

For more data, write this page number on Reader-Service card. →

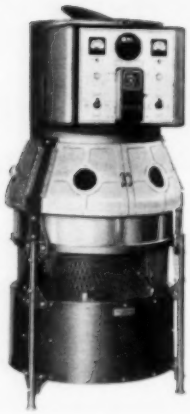


WEATHER-OMETER®

The Weather-Ometer is a laboratory apparatus for ascertaining at a greatly accelerated speed the trend of reactions which will occur on all types of products in outdoor exposures.

It is a self-contained machine, employing the three principal weathering agents: synthetic sunlight, moisture and temperature changes.

Automatic control, regulation and application of these weathering agents make it possible to establish standard test conditions which can be duplicated and reproduced at any time or place.



FADE-OMETER®

The Fade-Ometer is a patented self-contained electrically operated device for determining by accelerated tests in the laboratory the action of sunlight on all materials.

The enclosed violet carbon arc, source of radiant energy, provides noon June sunlight 24 hours per day. The Fade-Ometer provides constant, uniform and reproducible conditions regardless of time or place, thus speeding up research and production and insuring quality of product.

LAUNDER-OMETER®

The Launder-Ometer is the standard laboratory washing machine of the AATCC and is used for quickly determining the color-fastness of textiles to commercial laundering and domestic washing.

From one to twenty samples may be tested simultaneously under controlled conditions of temperature and mechanical action.

All Launder-Ometers have full automatic control with a choice of electricity, gas or steam for heating the water bath. A pre-heating and loading table is provided to save time and for added efficiency.

Atlas-Ometers

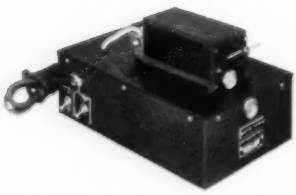
Standard laboratory instruments for speedily determining the durability and end-use performance of materials subjected to the deteriorating effect of sunlight, weathering, washing and wearing. Used throughout the world. Indispensable for fast, reliable, testing in product development and quality control in production. Exact standardized test programs can be repeated as frequently as required.

Complete catalog on each machine available upon request

Sole Manufacturers

ATLAS ELECTRIC DEVICES CO., 4114 N. Ravenswood Avenue, Chicago 13, Illinois, U.S.A.

Sales representatives in principal cities throughout the world

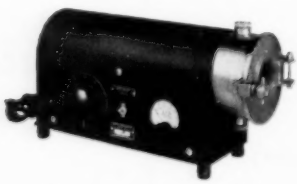


SCORCH TESTER

Standard machine for testing damage caused by retained chlorine. AATCC Tentative Test Method 69-52.

The damaging action of retained chlorine is determined by treating specimens in dilute sodium hypochlorite solution, pressing between hot metal plates, and then making breaking strength measurements on treated and untreated specimens.

It is applicable to any cellulosic textile fabric which may or may not have been treated with resin.

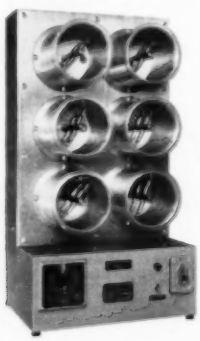


ACCELEROTOR®

An AATCC developed instrument for rapid evaluation of wet and dry abrasion qualities of woven, non-woven, knitted and coated fabrics.

Combines the actions of flexing, tumbling and random motion to produce abrasion from fiber against fiber as well as fiber against various abradent materials. Evaluations can be made of loss of color, weight, tensile strength and changes in dimension and hand.

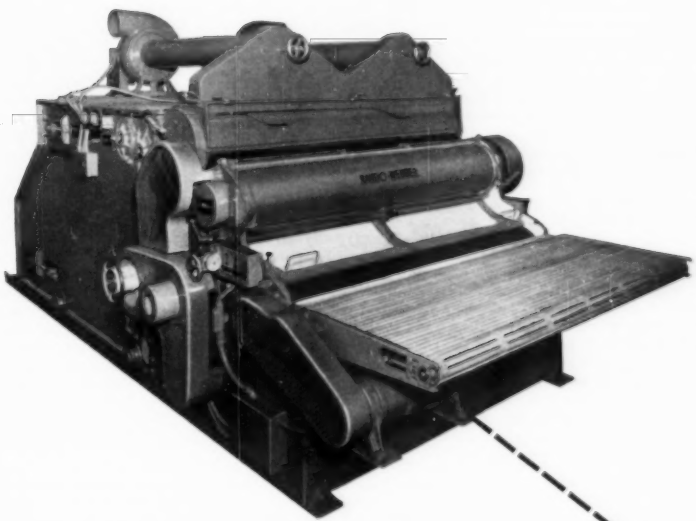
Test completed in three to six minutes. Permits alternate tests of washing or dry cleaning combined with dry abrasion.



RANDOM TUMBLE PILLING TESTER

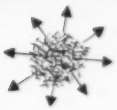
A new laboratory instrument for evaluating the pilling and fuzzing characteristics of all types of fabrics.

In the manufacture of Non-wovens, you get the MOST with RANDO-FEEDER® and RANDO-WEBBER®



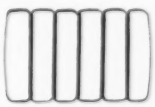
Available in 40", 60" and 84" widths

LOOK AT THESE ADVANTAGES:



Equal strength in all directions.

No waste—at least 98% fiber returned as web

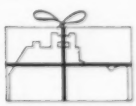


Low cost raw material

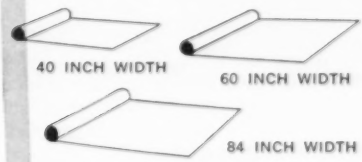
Stronger webs where delamination is diminished or eliminated. Normally entire web is formed in one layer.

Flexible—controlled with the turn of a knob.

½ oz./sq. yd. TO 30 oz./sq. yd.



Package unit ready to operate with all motors and guards included. Electrical, air, and water connections are all that is required.



3 models for producing random web with square, even selvages.

WRITE for complete details in Bulletin No. 105. Inquiries invited.

TEXTILE DIVISION
CURLATOR®
CORPORATION
EAST ROCHESTER, NEW YORK

EXPORT REPRESENTATIVES: Lendt & Company, 535 Fifth Ave., New York 17, N. Y.

SOUTHERN REPRESENTATIVE: Parrott & Ballentine 510 South Carolina, National Bank Bldg., Greenville, S. C.

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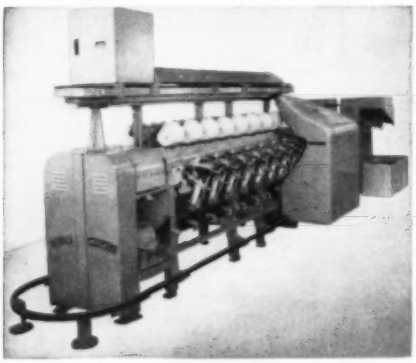
FOSTER MACHINE COMPANY

WESTFIELD, MASS., U.S.A.

Southern Office, Johnston Bldg., Charlotte, N. C.

Canadian Representative—Ross Whitehead & Co., Limited, 1475 Mountain St., Montreal, Que., and 100 Dixie Plaza, Port Credit, Ont.

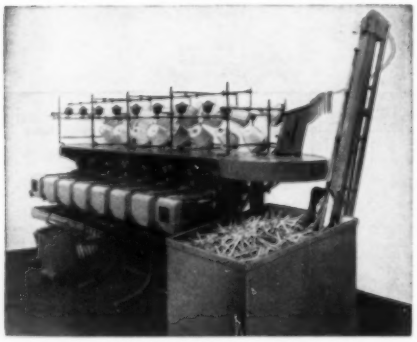
European Representative—Muschamp Textile Machinery Ltd., Keb Lane, Bardsley, Oldham, England



MODEL 202 AUTOMATIC CONE WINDER

MODEL 202 AUTOMATIC CONE WINDER

Suitable for winding all types and counts (except the coarsest) of spun yarns. Up to 148 spindles per machine. The only automatic machine which winds satisfactory knitting cones—same as those produced on the Model 102. Increases production between 100% and 300% over non-automatic winders, depending on kind and count of yarn. Automatically locates and ties ends down (in weaver's knot), automatically doffs empty bobbins and automatically sorts partially filled and empty bobbins, conveying them to separate bins. Only duties of operator are to put full bobbins in chutes, put the loose end in a clip, don and doff cones and thread up new cones. Bulletin A-100 on request.



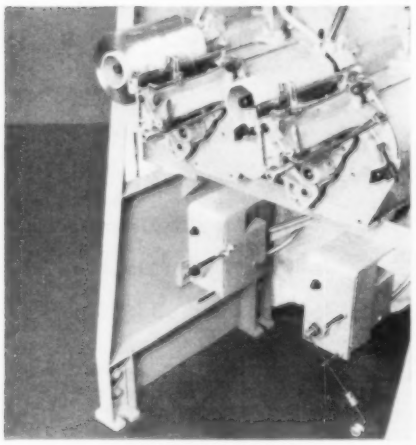
MODEL 66 AUTOMATIC FILLING WINDER

FOSTER-MUSCHAMP MODEL 66 AUTOMATIC FILLING WINDER

Suitable for winding all types and counts of spun and filament yarns. Standard machine is 32 spindles. Increases production per operator by 300% over competing automatic equipment. One operator can handle 4,000 net pounds per 8 hr. shift at a cost of about $\frac{1}{4}$¢ per lb. of yarn quilled. Operates at spindle speed of 15,000 r.p.m. while preserving the original quality of the yarn and producing practically perfect bobbins. Operator has only to keep magazine creel loaded and thread up. Everything else automatic, including conveying empty bobbins to spindles, starting and stopping spindles, doffing of full bobbins and conveying them to pinboards. Different counts or colors can be run on different spindles of same machine at same time. Bulletin No. M-4 on request.

MODEL 102 WINDER

Suitable for winding all types and counts of staple yarns. Can be equipped to produce open wind knitting cones, warping cones, parallel tubes or dye packages with traverses up to 7 inches. The tube or cheese winder can wind up to 600 and the cone winder up to 750 y.p.m. giving about twice the production of obsolete machines with 1/3 less labor. Flexibility or adaptability to changing requirements is an outstanding feature. With simple changes it will wind any standard taper cone, any angle of wind from 9° to 18°, package dyed yarns, even if damp, or conditioned yarn. Conditioning attachment is optional while self-threading tension and slub catching attachments, double empty bobbin conveyors, steel top creels and steel side boxes are standard equipment. Made with 10 to 120 spindles per machine. Bulletin A-95 on request.



TENSIOMATIC WINDER

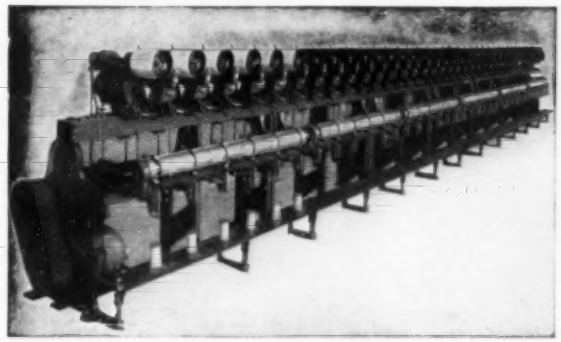
MODEL 75 WINDER

Suitable for precision winding of all types of filament yarns and cotton thread yarns. Will produce straight edge cones or parallel tubes with traverses up to 6", or pineapple cones by means of a special attachment. Spindle speeds up to 1500 r.p.m. Slow starting device—Foster-Zenith Yarn Cleaner—automatic stop motion—straight-line yarn oiling attachment—guideway balance spring—totally enclosed lubricated parts. Ball bearings on spindles and drive shaft. Individual spindle drives with 180° angle wrap around spindle pulleys. Only 2 H.P. motor for 36 spindle machine. Rigid construction and wide angle oversized cams reduce vibration and upkeep. Six spindles to a section; up to eight sections per machine. Bulletin A-92-A on request.

MODEL 57 DOUBLER

For winding two or more ends parallel on 6" or 7" tubes (from bobbins or cones) as a supply for twisting any type and count (except the coarsest) of staple yarn and combinations of staple and filament yarns. Winding speed up to 400 y.p.m. Ball bearing shaft—V belt drive—self threading, spring suspended tensions—slub catchers for single process doubling, adjustable individually or as a group—quick acting stop motion—conveniently located starting handle—quick and easy threading and doffing. Makes possible a round ply yarn free from corkscrews and rough places, eliminates dropped ply and reduces time required for creeling twisters. 20 to 120 spindles per machine. Bulletin A-96 on request.

FOSTER MACHINE COMPANY, WESTFIELD, MASS., U.S.A.



MODEL 76 NYLON SIZING MACHINE

MODEL 56 DOUBLER

Similar to Model 57 machine but designed for doubling coarser counts. Doubles or folds 2 to 6 ends up drawing from bobbins or cones and produces an 8" traverse, 10" diameter package, containing approximately 10 lbs. of yarn. Winding speeds up to 350 y.p.m.

MODEL 76 SIZING MACHINE

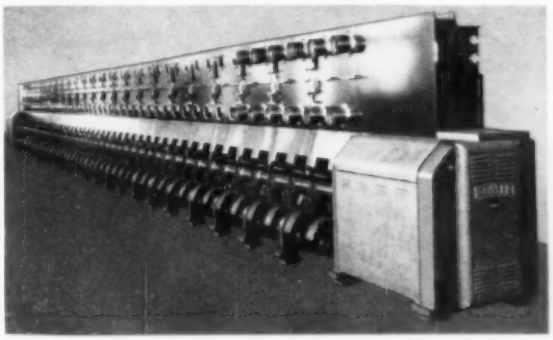
The original machine for sizing nylon yarn. Produces a barrel wind package on a 6" dia. Bakelite tube. This package assures even drying and easy give-off. Spindle speeds up to 2500 r.p.m. Ball bearing spindles and drive shaft—slow traversing sizing rolls—change gears for regulating percentage size—anti-wear tension and guide parts—stainless steel troughs and rolls. Built 6 spindles to section—up to 7 sections per machine. Bulletin A-97 on request.

MODEL 78 WINDER

For precision winding of tire cord, or coarse cotton or wool yarns from bobbins or skeins to tubes or cones with 6" to 10" traverse and weighing up to 35 lbs. each. Ball bearings spindles, individually motor driven. 1¼ h.p. for 5-spindle Machine. Push-button, electronically controlled slow start and spindle brake. Adjustable belt gainer. Easily positioned, single weight adjusting pressure and pressure release mechanism. Positive size stop, using long-life mercury switch. Guideways mounted on roller bearings. Individually serviced heads. Expansion-type tube and cone holders permit quick doffing and donning. Bulletin A-98A on request.

MODEL 403 TAKEUP WINDER

For continuous winding of meltspun synthetic fibre yarns direct from spinneret at speeds up to 6000 ft. per minute. Yarn (15 to 1200 drawn denier) travels from spinneret down through heated chimney to tandem finish rolls, with ceramic guides under each to maintain proper arc of contact, to a series of Godet feed rolls, a traverse guide and the package core, which is driven by a 6" dia. chrome plated steel roll. Pressure of package on roll automatically adjusted, as its weight increases. One 5¼" traverse package, two 3¼" traverse packages, or four 1" traverse packages per holder. Drive roll shaft and feed rolls driven by separate synchronous motors. Ribbon wind eliminated. 16" gauge, 56 spindles with 2 independent drives (28 spindles each). Other specifications if desired.



MODEL 403 TAKEUP WINDER

TENSIOMATIC WINDER

For continuous winding of wetspun or dryspun synthetic yarns direct from spinneret to 6" traverse packages (1 or 2 packages per position) or a 10" traverse Model 78 package weighing up to 30 lbs. Speeds up to 450 feet per minute. Precise wind machine. As package builds up and the tension on the yarn increases, the latter actuates an electronic control which slows down the motor driving the spindle. Thus a constant winding speed is maintained.

OTHER FOSTER EQUIPMENT

MODEL 40 PRECISE WINDER—for winding 30/2 to 8/40 to cones or tubes up to 6" traverse. Optional equipment includes ball bearing spindles and multiple end winding accessories. Six spindles to section. Up to 6 sections per machine.

MODEL 77 PRECISE WINDER—for winding 8/3 to 8/100 to cones or tubes up to 8" traverse. Ball bearing spindles and drive shaft. Equipment for overend or unrolling supply. Six spindles per section. Up to six sections per machine.

MODEL 24 WINDER—for winding tire cord or other coarse count yarn to 10" traverse open wind cones. Special equipment for rayon cord.

MODEL 35A WINDER—for winding coarser yarns to 8" traverse knitting cones.

MAGAZINE CONE WARP CREEL—for high speed beaming, ball warping or jack spooling of all types of yarns. Built to hold 6", 7" or 8" traverse wood or paper cones. Electric stop motion, if desired.

FOSTER-MUSCHAMP AUTOFILL WINDER

For the automatic winding of all types of staple and filament yarns to shuttle bobbins. Winding speeds up to 6,000 r.p.m. Bulletin M-1 on request.

FOSTER-MUSCHAMP AUTO-BRAID

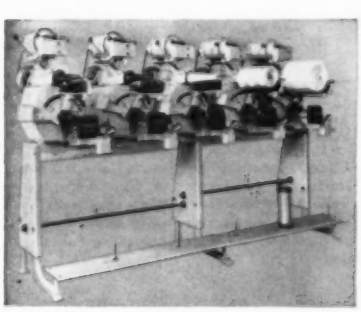
A fully automatic high speed braider bobbin winder. Spindle speeds up to 5,000 r.p.m. for parallel wound braider or similar bobbins.

FOSTER-MUSCHAMP AUTOQUILL

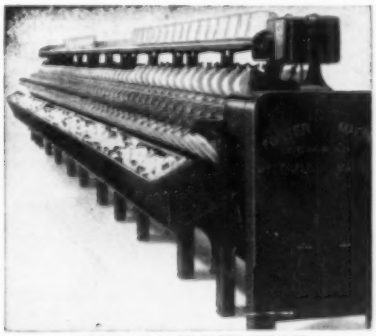
A versatile, fully automatic machine for winding any type of yarn on quills — with straight or oblique sides.

FOSTER-MUSCHAMP AUTO-THREAD

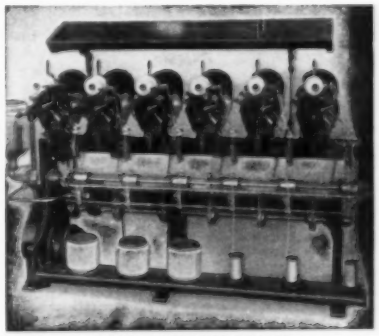
For precision winding of all sizes of sewing thread spools with high production—low maintenance. Fully automatic.



MODEL 78 PRECISE WINDER

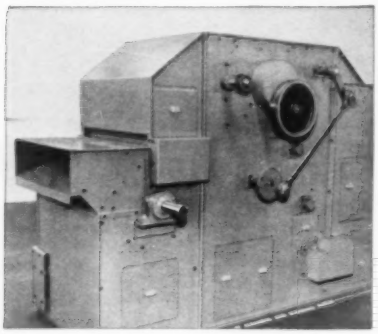


MODEL 102 HIGH SPEED WINDER



MODEL 75 PRECISE WINDER

Specify SACO-LOWELL



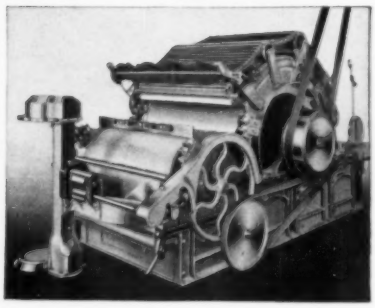
F-7 FEEDER and NO. 15 OPENER

The F-7 is an all-steel machine for opening, cleaning and blending the stock. It is equally effective on flat country bales, gin compressed bales, or bales of high density. Can be supplied with Apron Feed (with start and stop motion) or Hopper Feed. Production, 200 to 350 lbs. per hr. totally enclosed large-capacity hopper; built-in exhaust fan for dust removal; electric signal system; fine pin lifting apron; steel cleaning grid and steel doffer; sprinkler dome.

The No. 15 opener is the most effective unit ever offered for removing heavy impurities. It improves blending and produces completely opened stock. In actual tests the No. 15 opener increased the amount of waste extraction of the opening line by 25.3%. Rated production of 175 pounds per hour includes 18" diameter Buckley beater on anti-friction bearings, bronze beater picks, steel grid bars, and louvers to control flow of air used in separating waste from good stock.

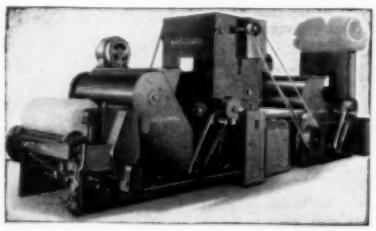
NO. 12 LATTICE OPENER and CLEANER

Complete opening process and preparing the cotton for passage through the picker room. Operates equally well on flat cotton, gin compressed, or high-density bales. Though generally used after the vertical opener, functions equally well at any place in the cleaning line. Production, up to 1200 lbs. per hr. Equipment includes: 24" Porcupine Beater with 192 hardened, renewable steel picks; ball-bearing beater boxes; cleaning grid with 80-waste-extracting bars; 2 waste compartments; oversize fluted feed rolls in horizontal plane; oversize high-duty gearing.



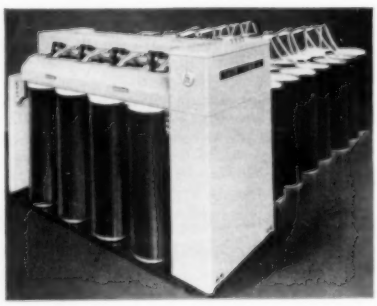
REVOLVING FLAT CARDS

Offer numerous refinements; standard with 40" x 50" cylinder, 27" x 40" doffer and coilers for 12", 14", 15", 16", 18" cans 36" or 42" high. Standard equipment includes: 9" diameter anti-friction bearing lickerin with point-hardened wire; 2 adjustable mote knives; adjustable waste control screen under lickerin and cylinder; universal feed plate with weighted anti-friction bearing feed roll; adjustable front and back plates; 110 revolving flats, on flexible bend with 5 adjustable points; Thompson Roll for flat strippings; improved tube gear; swinging calender roll in coiler; anti-friction comb box. Continuous stripper, control roll, or fancy roll can be furnished as an option.



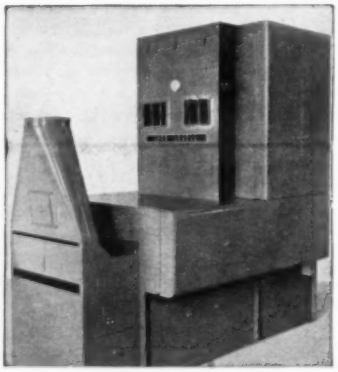
ONE PROCESS PICKER WITH BLENDING RESERVE

Furnished in 2- or 3-beater types—each of these equipped to receive their primary supply of cotton either from an F5 Feeder, or from a Saco-Lowell Automatic Control Feeding System. Produces up to 350 lbs. of well prepared cotton per hr. Equipment includes: No. 5 Hopper of Automatic Controlled Feeding System; Universal Adjustable Grid Bars; High Duty Fans; No. 7 Evener with Supersensitive Pedals and Belt Shifter; Hunting Tooth Measuring Motion; Pneumatic Rack Control with Foot Starter Motion and Automatic Rack Release. High compression calender rolls, optional.



VERSA-MATIC DRAWING FRAME

A new concept in drawing frames. Available in heads of four deliveries only with each head driven by its own directly connected motor. All bearings are anti-friction type. The new spring pressure system (Pat. Pend.) is top arm loaded and adjustable as to pressure and roll settings. Special construction eliminates all weight hooks and makes it possible to create and maintain predetermined roll pressure regardless of the roll spacing. Other features include a fast acting electric stop motion, self-cleaning clearers, and extended creel and the new 12", 14", 15" and 16" coilers to take cans of either 36" or 42" height. Also includes lifting rolls and high compression calender rolls.



NO. 16-1 OPENER

Opener is a completely enclosed, easy to clean unit which divides the aggregates of cotton fibers as finely as possible in a single operation. Leaf and semi-impurities are removed. The opener also blends because of the manner in which it separates individual fibers. It is recommended that the No. 16-1 opener be placed between the No. 15 opener and the No. 12 opener. Rated capacity of 1,000 pounds per hour includes 16" diameter carding beater on anti-friction bearings, Universal grid bars, revolving grid rolls, and adjustment to traps.

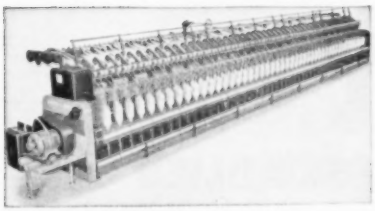
W-6 WASTE MACHINE

Efficiently reduces hard waste to a fibrous state with a minimum of fibre shortening. Made 2- to 6-section, with elevated rails or with calender. Handles fine or coarse roving, yarn waste, hosiery clips, coarse or fine duck waste.

Textile Machinery

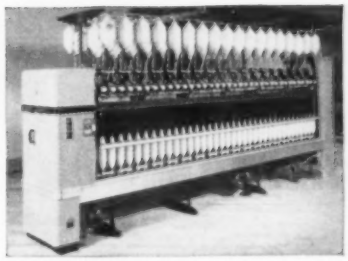
Cotton, rayon, wool and other natural or synthetic fibers in simple or complex blends can be efficiently and economically processed on Saco-Lowell equipment.

Our engineering staff, including a foreign division, is at the service of mills interested in diversifying their product and expanding their production facilities.



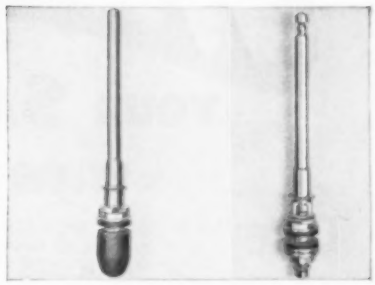
CONTROLLED DRAFT ROVING FRAMES

Roving frames can be furnished to process cotton as well as all of the synthetic fibers used commercially. There is a special drafting assembly for each type of fibre. These drafting assemblies are mounted on a frame which is rugged in design and construction, efficient and economic to make, simple to understand, and capable of turning out quality work at reasonable cost. Some of the special features are the G-38 cone, uniflex creel, anti-friction spur gear compound, chain drive spindle and bobbins, steel cap gear. Available in all conventional sizes, including 12 x 7, with the newly developed Jumbo Cones for maximum package sizes.



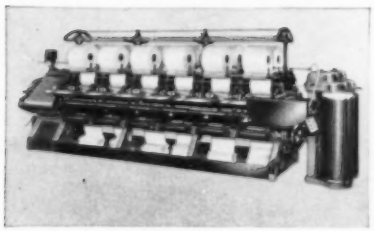
SACO-LOWELL GWALTNEY SPINNING FRAME

The Saco-Lowell Gwaltney Spinning Frame has been acclaimed as the only revolutionary development in spinning for over 100 years. This particular spinning frame is extremely versatile as a single gauge may be used in the spinning of all counts of yarn. The frame is built in 3" - 3½" - 4" - 4½" gauges to build a package having a traverse of 11½". Ring sizes range from 3½" to 2¼" depending upon the counts of yarn to be spun. As standard equipment, the frame is equipped with the Shaw, Duo-Roth or SS-4 drafting elements modified to meet customer requirements, Pneumafil, umbrella creel, anti-friction rolls top and bottom, and New Era Spindles with knee brake. The Gwaltney Spinning Frame is of completely new design throughout and embodies many important improvements in the design of spinning equipment.



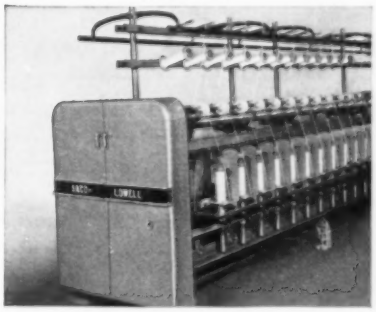
NEW ERA SPINDLES

Rated as one of the outstanding improvements in spinning equipment over a number of years, this spindle is a radical departure from the conventional spindle design, as the use of a tube revolving on two anti-friction bearings eliminates the necessity for frequent lubrication and bolster replacement. Re-lubrication is necessary approximately once every three years, on a three shift basis. Will increase tape life 300%, due to smoother running, lower tension, diminished drag, and absence of oil soaking into the tape, causing rotting. Fig. 1 is the rubber mounted type, showing the enameled steel protective cap. Fig 2 has the sleeve cut away to show the ball bearings, and the protective cap is removed.



MODEL 56 HIGH PRODUCTION COMBER

This new comber sets a new standard of efficiency from the standpoints of production per man hour, uniformity of sliver, recovery of fibre and low cost maintenance. The model 56 Comber, with 800 grain lap, at 95% efficiency produces 57 lbs. per hour. THE NEW, EDFORS EPICYCLIC ROLLER MOTION PRODUCES A PIECING SO NEAR PERFECTION THAT THE OVERLAP IS GENERALLY IMPOSSIBLE TO DETECT WITH THE NAKED EYE. Other improvements include: automatic top and bottom clearers; chrome plated feed and detaching rolls; a new, super efficient nipper frame, actuated by compression springs and equipped with shock absorber bumpers; and, extensive use of anti-friction rolls. In addition, the comber has Bijur equipment for automatic lubrication which delivers a metered quantity of oil to all points requiring periodic lubrication. Coilers for 12", 14", 15", 16" cans, either 36" or 42" high.



TWISTERS

Models for gauges from 2¾" to 8½"—Cross Shaft, Longitudinal Shaft and Spring Balanced Types. They can be equipped with creels as follows: 1. regular pin creel for side draw; 2. regular pin creel, up to 8 slats; 3. beam creel, for 1 to 4 beams 54" long; 4. Barber-Colman Type Creel; 5. over-end draw. Special design for synthetic fiber and tire cords. Spindles available include New Era, conventional anti-friction design, and McMullan types in all sizes to meet package capacity.

CHANGEOVERS

Modern drafting elements can be supplied for Roving and Spinning.

FOR ROVING there is the FS-2 Assembly for Cotton and Synthetics up to 2½" staple and the F-5 Assembly for longer synthetics, wools and blends.

FOR THE SPINNING ROOM we recommend either the *Duo-Roth Stay-Clean* or the new *Tru-Set* Unit. Our engineers will gladly survey your requirements and prepare a "Forecast of Savings" obtainable with these modern drafting elements.

Write to the nearest Saco-Lowell sales office for complete catalogs.

SACO-LOWELL SHOPS

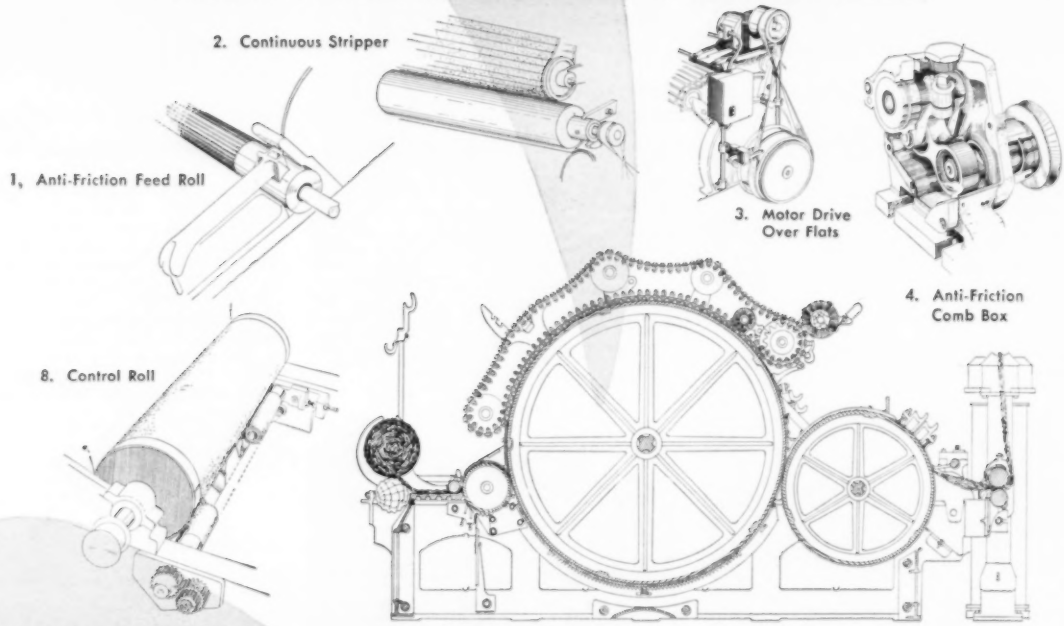
60 BATTERYMARCH STREET, BOSTON 10, MASS.

Shops at BIDDEFORD and SACO, MAINE, and SANFORD, N. C.
EASLEY, S.C.

SALES OFFICES: CHARLOTTE • GREENSBORO • GREENVILLE • ATLANTA

Modernize

YOUR SACO-LOWELL CARDS WITH THESE 8 SUB ASSEMBLIES

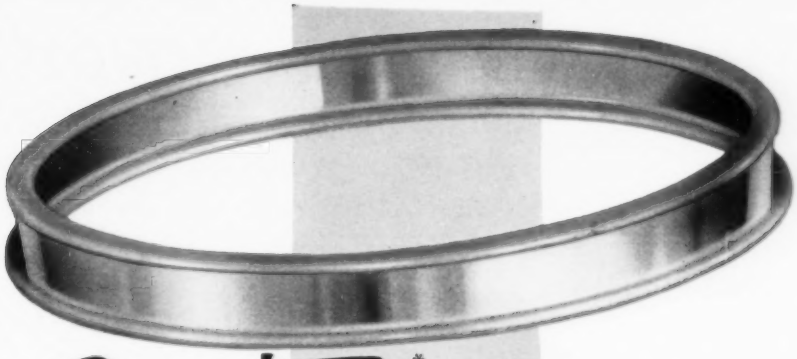

2. Continuous Stripper
1. Anti-Friction Feed Roll
3. Motor Drive Over Flats
4. Anti-Friction Comb Box
8. Control Roll
7. Roller-Bearing Lickerin Bearing Assembly
6. Perforated Screens
5. 14", 15", 16" and 18" Coilers, 36" or 42" high

The installation of these Saco-Lowell Sub Assemblies will modernize your cards to the point that they can compete on a cost-per-pound basis with newer cards. In addition, the overall quality of your card sliver will be considerably improved, production per man-hour will increase, and maintenance will be reduced to a minimum.

Write to your nearest Saco-Lowell Office — a Saco-Lowell Sales Engineer will be glad to supply complete information on Card Modernization and suggest a specific program.

SACO-LOWELL
60 BATTERYMARCH STREET, BOSTON 10, MASS.
Shops at BIDDEFORD & SACO, MAINE; SANFORD, N.C.; EASLEY, S.C.
SALES OFFICES: CHARLOTTE • GREENSBORO • GREENVILLE • ATLANTA

← For more data, write this page number on Reader-Service card.



The Speed-Tex* RING
by SACO-LOWELL

A Revolutionary Development in Ring Design! Offers the SHORTEST Breaking-in Period of Any Ring!

The Saco-Lowell Speed-Tex ring offers the shortest breaking-in period of any known ring. It retains all outstanding Pawtucket qualities — ultra-smooth finish, close tolerances, long life.

The final finish of the Saco-Lowell Speed-Tex ring is obtained at low temperatures which do not soften the initial case hardness of the basic steel ring. A softer ring would break in satisfactorily, but would have a short life.

Actual mill tests show only 4 or 5 traveler changes are required for complete breaking in, compared to 50 to 100 traveler changes for conventional style rings. The Saco-Lowell Speed-Tex will give consistently, ring after ring, high traveler speeds, the longest life, and the shortest breaking-in period of any ring available today.

TYPICAL INSTALLATION

Yarn, Warp—20.5's
Ring Size—3" Diameter
Spindle Speed—9,000 RPM
Traveler Speed—7,069 FPM
Traveler—Victor No. 2/0-X2D-191 HRW

Traveler changes during breaking-in period:

No. 1— 1 hour
No. 2— 20 hours
No. 3— 48 hours
No. 4— 96 hours
No. 5—120 hours

SACO-LOWELL Speed-Tex MODEL 01C

Higher Traveler Speeds Than Ever Before!

This exclusive Saco-Lowell ring reaches a new high in large package spinning speeds. Special flange contours permit traveler speeds never before attained. The inner flange, bearing surface of the traveler, is full width to provide a wide, steady traveler path. The outer flange, not a true bearing surface, has been sharply reduced in width.

A wider traveler may be used without changing its total weight. The increased width results in better traveler balance, more stable operation and superior running conditions. More bearing area and uniform pressure reduces traveler wear.

The Model 01C Speed-Tex has all of the advantages of other Speed-Tex rings — the shortest and most economical breaking-in period of any ring available.

COMPARATIVE MILL INSTALLATION DATA

Mill A 25's Warp Yarn Frame—SG-3D Gwaltney

Model 01C Speed-Tex	Conventional Ring
Ring Size—2½" Diameter Spindle Speed—11,500 RPM Front Roll Speed—154 RPM Traveler Speed—7,500 FPM Traveler—Victor No. 4/0-X3D-89-HRW	Ring Size—2½" Diameter Spindle Speed—10,200 RPM Front Roll Speed—136 RPM Traveler Speed—6,700 FPM

Mill B 24.75's Warp Yarn Frame—SG-3D Gwaltney

Model 01C Speed-Tex	Conventional Ring
Ring Size—2½" Diameter Spindle Speed—11,500 RPM Front Roll Speed—168 RPM Traveler Speed—7,500 FPM Traveler—Victor No. 3/0-X3D-89-HRW Break-in Schedule: No. 1—30 minutes No. 2—24 hours No. 3—48 hours No. 4—72 hours No. 5—96 hours Traveler Life—96 hours	Ring Size—2½" Diameter Spindle Speed—10,600 RPM Front Roll Speed—156 RPM Traveler Speed—6,950 FPM

*Patent applied for

PAWTUCKET SPINNING RING DIVISION
CENTRAL FALLS, RHODE ISLAND
SACO-LOWELL SHOPS
60 BATTERYMARCH STREET, BOSTON 10, MASSACHUSETTS
Shops at BIDDEFORD & SACO, MAINE; SANFORD, N.C.; EASLEY, S.C. Sales Offices: CHARLOTTE · GREENSBORO · GREENVILLE · ATLANTA

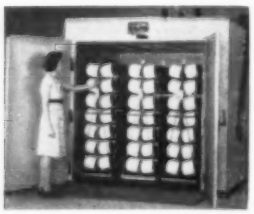
For more data, write this page number on Reader-Service card. →

Trademark Reg. U. S. Pat. Off.

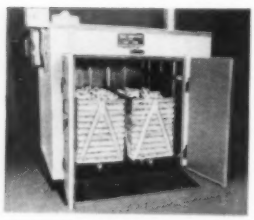
"H-W" Fully-Automatic CONDITIONER

for... CONDITIONING and TWIST-SETTING OF COTTON, SYNTHETICS, WORSTEDS, WOOLEN, SILK, ALL COMBINATION YARNS, and NYLON HOSIERY

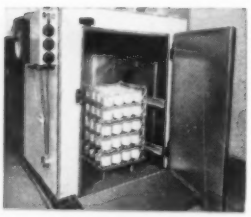
"H-W" Conditioner for Lofting and Regain Cotton Knitting Yarn.



"H-W" Conditioner for NYLON YARN handled on trucks.



"H-W" Conditioner for COTTON. Yarn is handled in slatted wooden truck.



"H-W" Conditioner for high temperature, arranged to automatically preheat, condition and exhaust.

THE "H-W" CONDITIONER

The "H-W" Conditioner is adapted to handle efficiently silk, synthetics, cotton, woolen, and worsted yarn on spools, bobbins, shafts, cones, tubes or quills. This machine maintains any desired temperature and humidity. The air is saturated with moisture, and yet there are no particles of moisture floating around to be deposited on the material. Moisture is in the form of water vapor, which has the ability to penetrate all the air channels in the material, because water vapor and air, each a different gas, can both occupy the same space at the same time without one displacing the other.

Advantages . . .

- Relative humidity, temperature and time of operation are automatically controlled.
- There is no condensation on the ceiling of the Conditioner, and consequently no danger of drops of hot water falling on the material.
- Penetration is uniform so that all the material will receive the same treatment.
- Conditioned air is delivered at temperatures which are best for the yarn. There is no yellowing of woolen yarn due to over steaming. Shrinkage is more uniform giving better results in dyeing and no loom stoppage due to wild and kinky filling yarn.

COMPLETE EQUIPMENT

"H-W" Conditioners are furnished with complete automatic controls and permanent record of operating time, temperature and humidity. The interior is lined with Monel metal or stainless steel over a welded steel frame, insulated with Fiberglas, while the outer covering consists of a board made up of asbestos fiber and Portland cement, so that both the inside and outside are rust proof. The floor is a solid piece of nickel-clad steel, requiring no tracks. It can be furnished with steam coils or electric heating elements and is more economical in operation than any other known method of twist setting. It is built in many different sizes to meet all mill conditions.

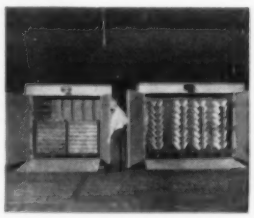
SPECIAL FEATURES

Conditioners can also be arranged to automatically preheat, condition, and exhaust or dry at the end of the conditioning period. Special conditioners are available for dry bulb temperatures up to 300° F.

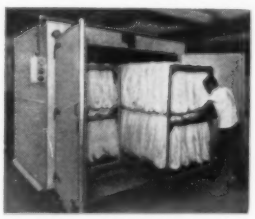
FOR COMPLETE INFORMATION WRITE FOR BULLETIN U. C.

PATENTS:

"H-W" equipment described herein is protected by the following United States Letters Patents: 1,564,566; 1,605,633; 1,605,634; 1,667,315; 1,815,669; 1,853,419; 1,853,421; 1,853,422; 1,853,423; 1,853,424; 1,919,107; 1,951,281; 1,961,606; 1,968,764; 1,971,405; 1,972,772; 1,975,717 and 2,606,372.



"H-W" Conditioner for WORSTED YARN on bobbins and cones.



"H-W" Conditioner for Regain.

"H-W" Conditioner for WOOLEN and WORSTEDS. Canvas baskets are used in conditioner.

"H-W" Conditioner for Nylon Hosiery—96 doz. pr. capacity. Write for Bulletin H1: "H-W" Conditioner for Nylon Hosiery.

THE INDUSTRIAL DRYER CORP. STAMFORD CONNECTICUT

Sales Representatives in Key Textile Areas

Up Against A Card Room Problem?

CARD CLOTHING

For Example

One mill, faced with what its president called a "terrible mess in the card room," reported:

"Your man left us in a position to handle our job successfully and with a personnel that he had trained for us. Our weaving efficiency, now over 90%, is about 10% above what it was. We give him all the credit — what he accomplished would have taken us months to do."

IT'S wise, then, to turn to a TUFFER man. He'll be on the job — RIGHT IN YOUR OWN MILL— and help you work out a solution.

He'll come up with *workable* suggestions and recommendations to kick up production and at the same time improve the quality of your material.

You'll get that valuable ON-THE-SPOT PERSONAL ATTENTION that TUFFER men have been giving to textile mills for years.

Contact us direct at Worcester, Massachusetts, or at our Southern plants at Atlanta, Georgia, Gastonia, North Carolina or Greenville, South Carolina. Your call will bring immediate action, without obligation.

B-2

Manufacturers of Card Clothing since 1866

HOWARD BROS.

WORCESTER 8, MASSACHUSETTS

Southern Plants: Atlanta, Ga., Gastonia, N. C., Greenville, S. C.

Direct Representation in Canada

TUFFER PRODUCTS Card Clothing for Woolen, Worsted, Cotton, Asbestos and Silk Cards • Napper Clothing, Brush Clothing, Strickles, Emery Fillets. Top Flats Re-covered and extra sets loaned at all plants. Lickerins and Garnet Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plants • Midgley Patented, and Howard's Special Hand Stripping Cards • Top Flat Chains

For more data, write this page number on Reader-Service card. →

Rely on EPI for Quality Textile Accessories

Largest Diversified Plastic Stock in the South

EPI's large and diversified stock of plastic sheets, rods, and tubes assures immediate shipment of your order — and prompt fabrication of precision plastic parts and shapes.

Plexiglas®
Micarta®
Nylon
Acetate
Phenolite®
Teflon
Fibre
Polystyrene
Celeron®
Panelyte®
Texolite®
Formica®

Plastic Bobbins, Caps, Accessories, and Machine Parts

EPI Plastic Bobbins have proven best in throwing and twisting tenacious yarns. Select materials, concentric construction, and the patented EPI lock ring assembly* resist the tremendous crushing strength of these materials. Dynamic balancing assures smooth running work at highest speeds.

EPI Plastic Bobbins are also becoming increasingly popular for cotton, rayon, and acetate. Dimensional stability, longer life, and smoother running at high speeds make them far superior to wood or fibre bobbins in performance and economy.

EPI manufactures a wide variety of tubes, caps, loom parts, specialties, etc. — in plastics and metals — for textile equipment.

* U. S. Patent 2,625,343

EPI Plastic Coatings for 1001 Uses

EPI is equipped to apply a wide variety of plastic coatings to textile metal parts. These coatings can be supplied in a wide range of permanent colors for quick identification, as well as providing longer wear, smooth surfaces, and protection of metals where contamination is a problem.

The potential uses of these coatings are almost limitless. Take up tubes, spools, guides, bar pins, loom filling grates, seamer chutes — in fact any metal part which is subject to abrasion or corrosion will last longer and give better service if coated by EPI's new process.

EPI Lock Spring Spindle Adapter*

This adapter assures positive drive . . . true running to center and is easily doffed.

The EPI Lock Spring Adapter is available for various size tubes, hollow bobbins, and quills and cones.

Write for full information on any EPI products or services.

*Pat. Application 652,583

ENGINEERED Plastics INCORPORATED

123 Chase Street
Gibsonville, N. C.

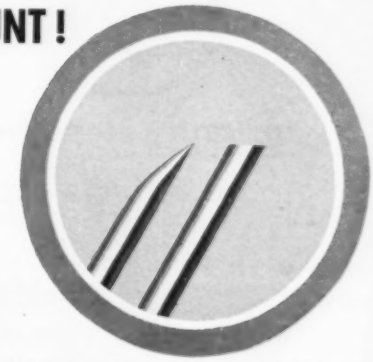
Booth

Originators of **SUPR-O-TAPE • SUPR-O-BAND • STRIP-O-MATIC • MICR-O-GRIND**

MANUFACTURERS OF QUALITY CARD CLOTHING SINCE 1892

REDUCE YOUR NEP COUNT! WITH MICR-O-GRIND*

*Pat. Pending



MILL TESTS SHOW:

Nep count reduced 40%

Blending improved substantially

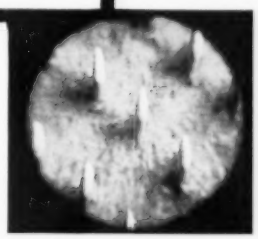
Yarn strength up 10%

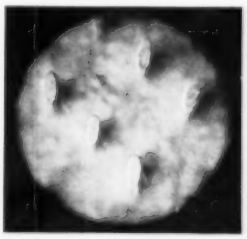
Grinding 80% less frequent

Grinding time less than 30 minutes (normal 6-8 hours)

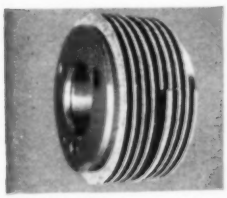
Stripping 65% less frequent

NEW AND EXCLUSIVE METHOD of putting an extra sharp needle point on the staples of card clothing. MICR-O-GRIND is especially suited for cotton mills and for woolen mills with difficult blends or noily stock.





Note needle point from MICR-O-GRIND (left) compared with conventional flat point (right). Extra sharp MICR-O-GRIND points card out the neps and reduce the nep count as much as 40% on cotton. Sharper points also allow stock to release itself—hence less loading—and also give greatly improved carding action. Stripping of cotton cards only once a shift—on woolen cards as little as once a month.



Grinding discs are spiraled to take off the heel of each tooth. MICR-O-GRIND head fits your conventional grinding shaft.

HOW IT WORKS

Exclusive new MICR-O-GRIND head has spiraled abrasive discs to take off the heel of the wire. This leaves a needle-like point, long recognized as ideal for card clothing. *Never before has this ideal been attained.* Conventional grinding invariably leaves a flat point because no way was known to grind the teeth to a perfect point.

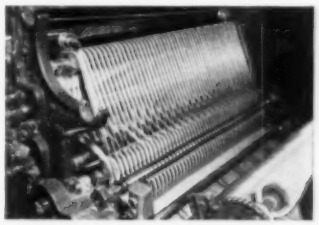
IMPROVED QUALITY

The needle point of the teeth holds the fibres long enough to be thoroughly carded and yet does not tear the fibres. This provides a more gentle combing action for increased yarn strength, better blending and reduces neps by as much as 40% in cotton carding.

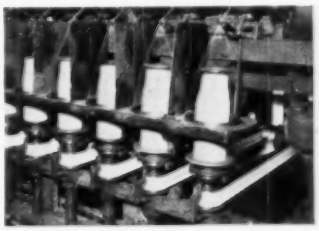
Needle point is smooth enough to release the stock easily, yet the fine serrations (as seen under a microscope) will not let the fibres escape without being carded. This also means that there is less beating action at the doffer comb as the web flows more readily off the card.

REDUCED COSTS

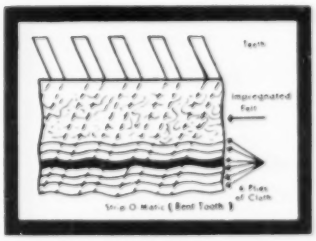
through reduced Down Time for grinding and stripping. MICR-O-GRIND clothing is very inexpensive—only 5% more. The MICR-O-GRIND needle point can be applied to any type of card clothing—the only difference is the point. In a cotton mill, you can get your standard 100's, 110's, etc., in either CCWC, CWC or rubberfaced foundation—also any woolen clothing.



SUPR-O-TAPE—the new proven condenser tape for longer life—improved roving—no stretch—no cracking—no need to oil—no dropped ends—holds square edges indefinitely.



SUPR-O-BAND—a new banding for spindle drives on twisting, roving and spinning frames for longer life—high friction surface—rough, rugged construction—positive drive—LINT FREE.



STRIP-O-MATIC—clothing greatly reduces stripping waste, down time and costs.

BENJAMIN BOOTH COMPANY

ALLEGHENY & JANNEY STS., PHILA. 34, PA.

Booth

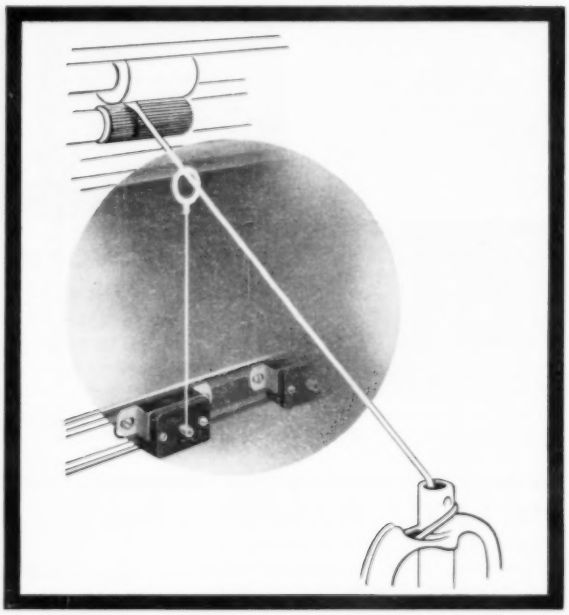
Adamstop

***instantly* stops frame when these defects occur . . .**

- SLIVER RUNOUTS
- LAPPED ROLLS
- CHOKES (sliver)
- PLUGGED FLYERS
- SINGLINGS
- RUNOVERS
- CLEARER WASTE
- BAD SLIVER SPLICES

. . . MAKING IT POSSIBLE FOR AN OPERATOR TO RUN 8 MODERN FRAMES. 4 OPERATORS TAKE CARE OF ALL THE DUTIES ON THIS NEW 32 FRAME JOB:

Frames per operator	8
Size of frame	12 x 7
Hank roving	1.15
Spindles per frame	96
RPM of front roll	130
Percent efficiency	89
Size can in creel	15″ x 42″



This ADAMSTOP Nylon Eyelet monitors all roving production from sliver to spindle! If the roving slackens or breaks due to any roving failure, the Adamstop eyelet falls to either side making contact with an electrical circuit which stops the frame. This eliminates faulty production, excessive waste, damage to the roving frame and frees the roving tender of close supervision of each frame.

It's a good bet that with ADAMSTOP YOUR operators can run 25% to 100% more spindles.

ADAMS, Inc., 209 East Stone Ave., Greenville, S. C.—Phone CEdar 3-8381

Representatives

Export Agent Lendt & Co., Inc.
535 Fifth Avenue
New York 17, N. Y.

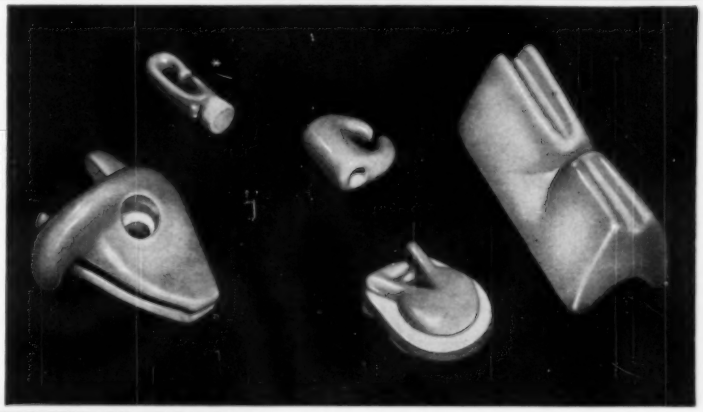
Canadian Agent Steele Heddle of Canada, Ltd.,
Granby, Quebec

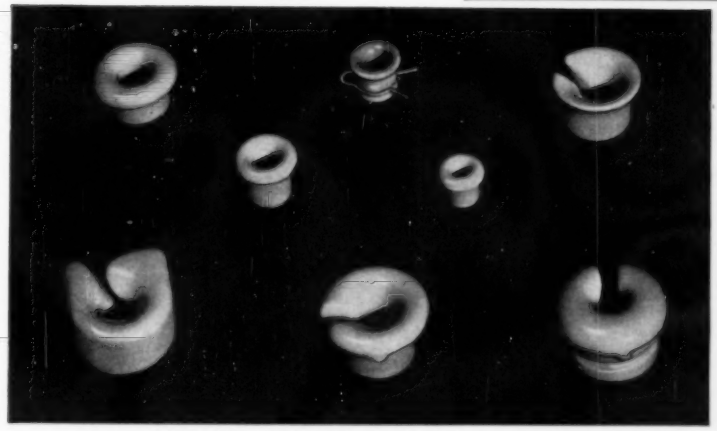
Georgia-Alabama Cecil A. McAbee,
184 Heaton Park Drive,
Decatur,
Georgia

MITCHELL-BISSELL THREAD GUIDES

For Every Textile Service

. . . For More Than 70 Years





Above—"BLUE SATIN FINISH" PORCELAIN GUIDES.

An exclusive development of Mitchell-Bissell — guides with this finish are more resistant to thread wear than any glazed porcelain guides ever offered the industry. "Blue Satin Finish" Guides, instead of being shiny and glass-like, have a surface of thousands of small rounded grains closely packed together. Reduced wear and longer guide life result because, by breaking the continuity of contact between yarn and quide, friction is reduced. *U. S. Pat. No. 2,152,136.

Left—WHITE GLAZED PORCELAIN GUIDES.

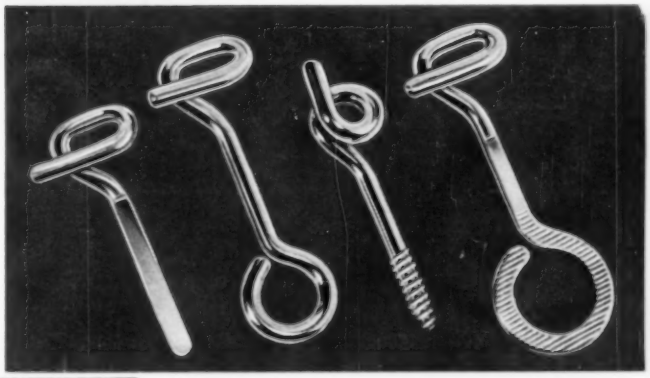
The Mitchell-Bissell Company originated the use of porcelain as a thread guide for the textile industry. The White Glazed Porcelain Guides shown here are representative of thousands of patterns that have been sold to all branches of the textile industry since this company was founded over seventy years ago. Improved in quality from time to time they are still "Standard."

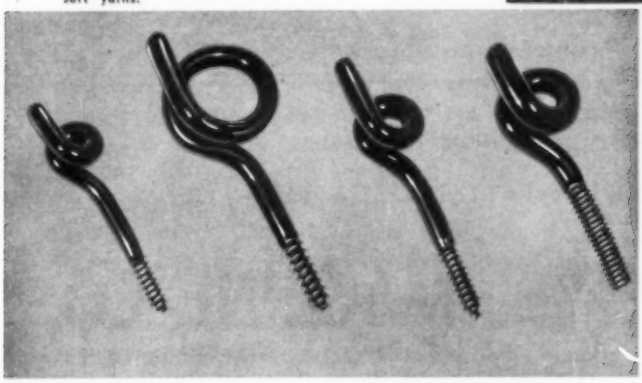
Right—CHROMIUM PLATED STEEL GUIDES.

The plating on Mitchell-Bissell Chromium Plated Steel Guides is harder and denser than on any other wire guides. Our methods of fabricating and polishing develop a surface smoothness far beyond usual commercial standards. Because of their superior resistance to thread wear these guides are used extensively on machinery for processing rayon and nylon yarns and also for many other severe applications. Mirror or satin finish.

Below—ENAMELED IRON GUIDES.

Where wire guides are desired, and service conditions do not require chromium-plated guides, our Enameled Iron Guides give exceptionally good service, with a low initial cost. Made with the care and craftsmanship that are standard practice on all Mitchell-Bissell products, these are recommended as centering and ballooning guides, and for cotton, woolen and other soft yarns.





MITCHELL-BISSELL CO.

TRENTON, N. J.

Southern Representative: R. E. L. Holt, Jr. & Associates
Greensboro, N. C.

PROVE QUALITY BY THE SPECTOGRAPH TEST

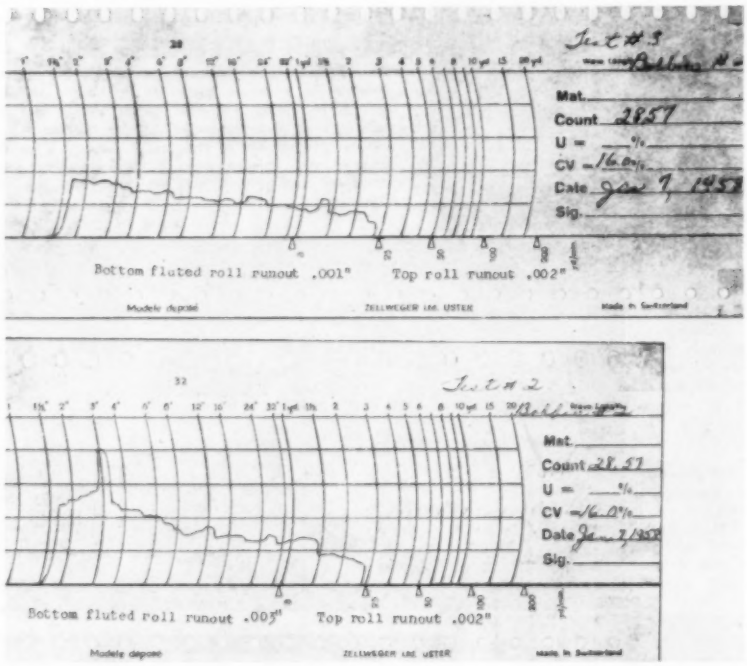
HIGH DRAFTS REQUIRE PERFECTLY FLUTED ROLLS WITH A MINIMUM OF RUNOUT.

F. A. YOUNG'S PERFECTLY FLUTED STEEL ROLLS WITH .002 RUNOUT GUARANTEED

QUALITY YARN DEPENDS ON QUALITY ROLLS—KNOW YOUR ROLLS
TRY THIS SPECTOGRAPH TEST

Following are the results of two spectograph tests

Draft of 46—same roving—same cradle—same top rolls (nyaf Anti-friction)



Test No. 3, taken with new F. A. Young steel rolls using same drafting and roving as in Test No. 2. Bottom Fluted Roll Runout one thousandths of an inch (.001)

[Tests show that 80% of OUR New Rolls have runout of .001 or less.]

NOTE:

Same Top Rolls used in both tests having runout of two thousandths of an inch (.002)

Test No. 2, taken with Bottom Fluted Roll having runout of three thousandths of an inch (.003)

IMPROVE MANUFACTURING PROCESSES ENABLE F. A. YOUNG MACHINE COMPANY TO GUARANTEE NOT OVER .002 RUNOUT ON INDUCTION HARDENED, FLUTED STEEL ROLLS.

QUALITY ROLLS PRODUCE PATTERNLESS YARN

F. A. YOUNG MACHINE CO.

Telephone UNiversity 5-8556

GASTONIA, NORTH CAROLINA

FLUTED ROLLS FOR SPINNING • FLYER FRAMES • COMBERS • DRAWING & LAP MACHINES • NYAF

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NATIONAL RING TRAVELER CO.

AND STERLING DIVISION

MAIN OFFICE AND PLANT
354 Pine St., Pawtucket, R. I.
F. L. Chase, Jr., Pres. and Treas.

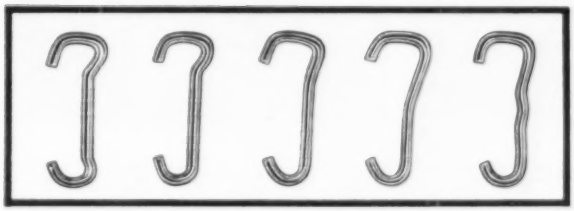
NORTHERN SALES ENGINEERS
Henry A. Carter, Pawtucket, R. I.
J. S. Furtado, New Bedford, Mass.

EXPORT AGENT
A. M. Romero Corp.
350 Fifth Ave., New York 1, N. Y.

SOUTHERN OFFICE AND WAREHOUSE
P. O. Box 293, Gaffney, S. C.
L. Everett Taylor, So. Mgr.

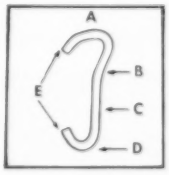
SOUTHERN SALES ENGINEERS
H. B. Askew, P. O. Box 424, Griffin, Ga.
T. Hill Ballard, 112 N. 9th St., Belmont, N. C.
Frank S. Beacham, P. O. Box 511, Honea Path, S. C.

There's a National-Sterling Traveler for Every Need



VERTICAL TWISTER TRAVELERS
BRONZE, PHOSPHOR BRONZE, STEEL

To fit 5/16", 3/8", 7/16", 1/2", 5/8", 21/32", 45/64", 11/16", 7/8", 1", 1 1/8", 1 1/4" depth vertical rings



A Head
B Break
C Back
D Heel
E Horns

FOR BEST RESULTS these Travelers are made to fit the rings on which they are to run.

THE HORNS are made long enough to hold the Traveler on the ring, but not so long that the Traveler is bent out of shape when being put on the ring, nor must the HORNS come in contact with the rail or holder when in motion.

THE HEAD must be large enough for the yarn and knots to pass thru freely and must also balance the Traveler so that it will run in a correct position.

THE BREAK in the BACK depends on the type of ring and also affects the position in which the Traveler will run.

THE HEEL must be made to the thickness of the ring and allow for freedom in running.
Made of round, oval or flat wire.
Flat Oval — Wire that is flattened slightly on the oval.
Combination Ellipse Duplex
Ellipse rolled wire in head where yarn runs and flat wire at back and heel at point of contact with the ring.

Whatever fibers you are running — cottons, wools, synthetics, or blends — it will pay you to use National-Sterling Travelers. When ordering, send sample of Traveler you are now using and, if possible, give diameter and flange of horizontal rings — diameter and depth of vertical rings.

ROUND POINT TRAVELERS
Regular, Narrow & Wide Style

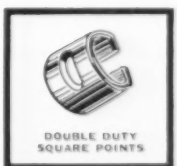
For Flange 1 rings:
Circles 1/2, 9/16, 5/8, 3/4, 1, A-1, 1 1/2, 2
For Flange 2 rings:
Circles 3/4, 7/8, 1, A-1, 1 1/2, 2, 3, 4, 5, 6
For Flange 3 rings:
Circles 2, 3, 4, 5, 6

REGULAR ROUND POINTS

SQUARE POINT TRAVELERS
Regular, Wide & Narrow Style

For Flange 1 rings:
Circles 1/2, 9/16, 5/8, 3/4, 7/8, 1, A-1, 1 1/2, 2, 3
For Flange 2 rings:
Circles 3/4, 7/8, 1, A-1, 1 1/2, 2, 3, 4, 5, 6, 7
For Flange 3 rings:
Circles 3, 4, 5, 6, 7, 8

REGULAR SQUARE POINTS


DOUBLE DUTY SQUARE POINTS

ELLIPSOID SQUARE POINTS

SPECIAL STYLES OF TRAVELERS
For special work or conditions

Round Wire
Oval Wire
Combination Ellipse Duplex Horns
Ellipsoid, Bal-Ellipsoid, E. C. Lowboy, Flat Top — For high speed spinning
Double Duty
Gravity
Gravity Express
Etartnep Finish

Most of these styles can be supplied in either Round or Square Points for Flanges 1, 2, & 3.

COMB. ELLIPSE DUPLEX HORNS

STEEL GRAIN TRAVELERS
Square and Round Points

For Dry Twisting on Horizontal Rings
Wide, Regular & Double Duty Style
For Flanges 2, 3, 4, 5, 6, 7, 8, 9, 10
Circles to fit rings & conditions
Flat, Oval & Round Wire

SQUARE POINT GRAINS

ROUND POINT DBL. DUTY GRAINS

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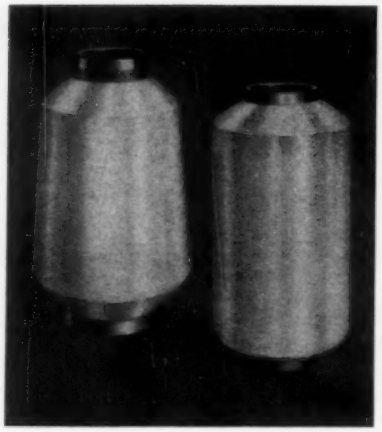
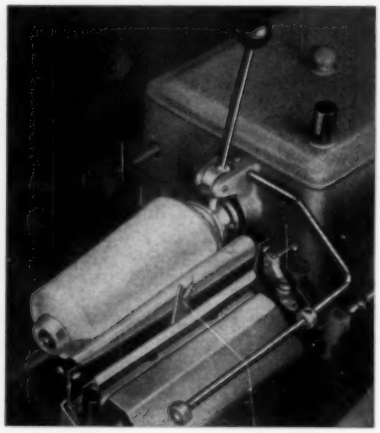
SCHWEITER

Perfect build-up and formation of bobbin with conical soft roller. ▶▶



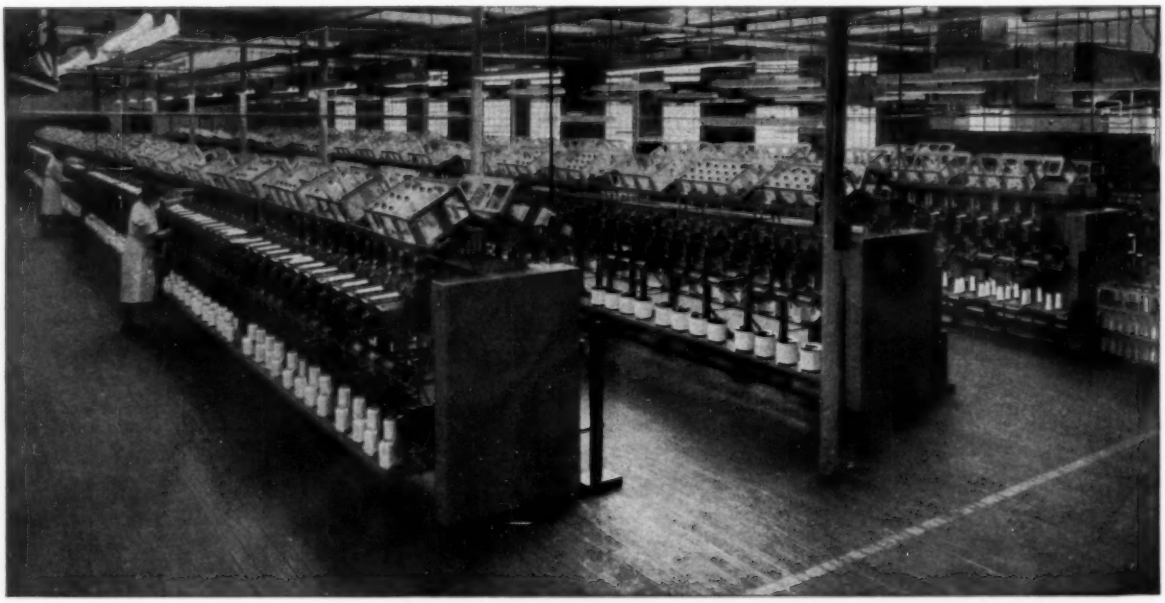
Multifilament and monofilament synthetic yarns on pineapple cones and cylindrical cheeses with tapered ends on both sides. ▶



The MONOFIL-CONER Type KEK-PN

and the Pineapple Bobbin for Knitting and Twisting

- Each winder unit with PENTA-Wind
- With constant Yarn speed or constant Spindle speed
- Stainless emulsion applicator and humidifier, infinitely adjustable
- Winding units suitable to wind pineapple bobbins onto paper cones of 3° 30′ or 3° 51′ conicity or cylindrical cheeses



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HORGEN (Zurich) Switzerland

Sales and Service in the United States and Canada **H. J. Theiler Corporation**

WHITINSVILLE, MASSACHUSETTS SPARTANBURG, SOUTH CAROLINA

For automatic weaving

for all types of looms, for all types of stop motion, made of different types of hardwood, and with various varnished finishes, suitable for every requirement.

EMIL ADOLFF Reutlingen/Wttbg., Germany

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LOOK! ONLY ON ORDNANCE

CIRCULAR FULLY AUTOMATIC KNITTING MACHINES

DO YOU GET...

the styling VERSATILITY

YOU NEED FOR COMPETITIVE SELLING!

AND NO OTHER MACHINE SO QUICKLY PAYS FOR ITSELF WITH GOODS YOU SELL AT A PROFIT

THIS is a world of fashion . . . a world of constant style change. Manufacturers planning for *continuing* profits, shun equipment *that limits styling*—because *style* is the main factor that really helps *to sell at a profit!*

ORDNANCE GAUGE EQUIPMENT *lifts the limit* on profitable production. It permits UNMATCHED styling VERSATILITY: it helps avoid the saturation, *over-production* of commonplace merchandise that too often must be sold at disastrous surplus prices. Ordnance equipment helps to end costly down-time idleness that often results in ever-changing factory help.

In contrast, on just one ten cut machine—the unmatched Ordnance Gauge OTA model—it is possible to easily attain high production and attractive low unit-cost in a great variety of plain or fancy stitches with or without cuffs. Some of the pattern possibilities—*ALL made on a single 10 cut machine*—are typified by the *unretouched* photographs shown on the opposite page. ORDNANCE equipment provides almost unlimited styling opportunities to make truly saleable, "exclusive" sweaters and skirts . . . and yes, even entire dress ensembles . . . of natural or synthetic yarns.

You knit on 8 feeds with the OG 18″ or 24″ model. You knit on 12 feeds on the 30″ or 32″ model.

ALL ORDNANCE GAUGE OG Circular fully automatic machines are available in any cuts from 4 cuts and up and with 3 color stripers on all feeds.

Write *today* for full information and *proof* that Ordnance equipment—and ONLY Ordnance Gauge Equipment—enables you to economically and *profitably* adjust your production to the ever-changing style preferences of your customers.

ORDNANCE GAUGE COMPANY

Amber & Hagert Streets, Philadelphia 25, Pa.

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Empire State Bldg.
New York

HAE OG 396 158

From Opening Room to Dyehouse

SARGENT EQUIPMENT

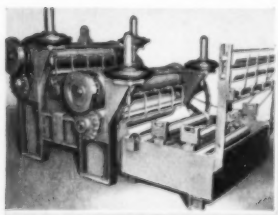
for ANY FIBRE - ANY BLEND

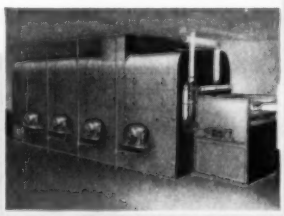
gives you
- NEW STANDARDS
- MODERN ENGINEERING
- PROVEN PERFORMANCE

One machine or complete systems, SARGENT textile machinery, with its rugged construction, economy of operation and highest standards of performance, helps mill men today to better quality work at substantial savings.

For all fibre-preparatory operations; for special yarn-handling equipment from yarn scouring and drying to yarn conditioners and balling machines and hankers; for conveyor and condenser systems; for specialized machines for many purposes,

SARGENT MACHINES *are the best workers in your mill.*

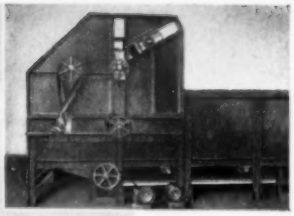




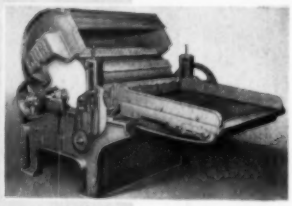
BACKWASHER and BACKWASH DRYER

For washing and drying sliver as it comes to the cards — for final washing of top before finisher gilling — for rinsing and setting of dyed top in ball form. The easiest of all backwashers for threading ends quickly — up to 48 three-ounce ends run through simultaneously — better than 700 pounds hourly production of card sliver — SARGENT design eliminates danger of broken ends at stopping and starting.

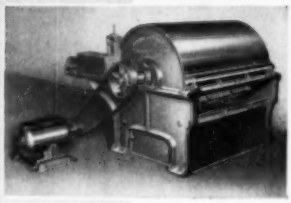
HEAVY DUTY OPENER
With Rotary Evener and Stripper. An exceptionally rugged machine For opening compacted dyed fibres, natural and synthetic, for better, more uniform drying —for opening heavy grease wools for better picking and cleaning.



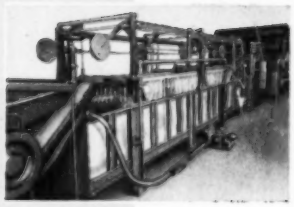
WET AND DRY PICKER
As efficient for opening and picking synthetic staple as it is for wet cotton prior to drying — high production on all fibres. Highly popular in the absorbent cotton industry.



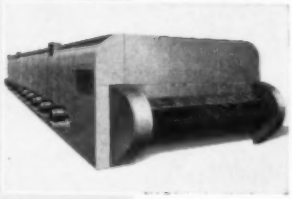
MIXING PICKER
Heavy duty, ideally adapted to continuous blending systems. Single or double pairs of feed rolls — adjustable nip—variable speed drives.



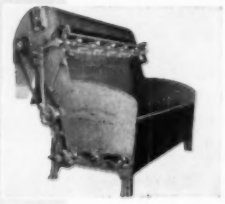
STAINLESS STEEL WASHER
Acid-resistant, stainless steel throughout. Ideal for scouring, bleaching, acidifying. May be equipped with side-settling tanks and lanolin recovery system.



STOCK DRYER
Single apron — the leader in modern dryer design and production. Rugged construction, down-draft air flow, automatic and continuous production.



AUTOMATIC FEED (Model N)
Hopper type, continuous, automatic — compact to conserve floor area. High production — thorough stripping action — easily adjustable evener comb either rotary or oscillating.



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Graniteville, SINCE 1852 Massachusetts

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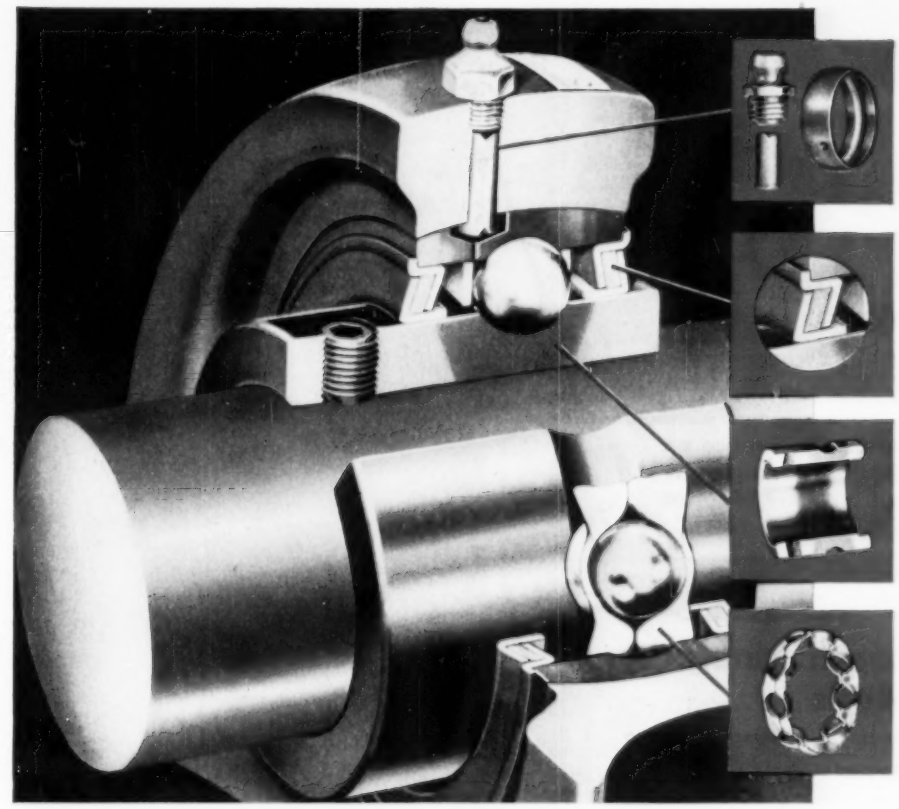
Smooth, Silent Air Conditioning Performance Depends on

SEALMASTER BALL BEARING UNITS



EXCLUSIVE COMBINATION OF FEATURES . . .

LOCKING PIN & PERIMETER DIMPLE

. . . permits selective fit between outer race of bearing and housing — an important feature that assures quiet bearing operation for air conditioning service.

LABYRINTH SEAL

. . . keeps dust and dirt out and lubricant sealed in, assuring long bearing life.

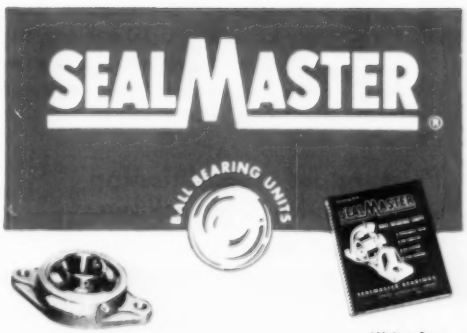
ZONE HARDENING

. . . assures positive race to shaft holding power. Reduces corrosion.

LAND RIDDEN BALL RETAINER

. . . minimizes ball wear, traps grease and prevents "churning."

An air conditioner — like any piece of equipment — becomes obsolete the day your competitor's product out-performs your own. It is for this reason that air conditioning engineers are continually involved in research to find ways to improve their product. It's the reason, too, that you find SEALMASTER Ball Bearing Units specified by many of the leading air conditioning manufacturers. SEALMASTER Ball Bearing Units, with their exclusive combination of patented engineering features, provide you with a decided performance advantage. It's the ball bearing unit line that's often copied but never equalled for performance.



PILLOW BLOCKS | CARTRIDGE UNITS | FLANGE CARTRIDGE UNITS | RUBBER MOUNTED UNITS | FLANGE UNITS

Write for catalog 454

SEALMASTER BEARINGS A DIVISION OF STEPHENS-ADAMSON MFG. CO. 48 RIDGEWAY AVENUE, AURORA, ILL.

Ideal New or Reconditioned Parts

Save Money

Improve Production

New Spindles

(left to right)

- Spinning
- Twisting • Throwing
- Roving • Adaptors
- or COMPLETE Reconditioning Service on your present spindles, including new whorls and induction hardened blades for spinning, twisting and throwing.

New or Reconditioned Top Rolls

for • Spinning • Twisting • Roving • Combing • Drawing

New Top Rolls of induction hardened steel.

We recondition your worn top rolls with Ideal's tough, oil-retaining, cushion-action specialloy process.

Barrel hubs *die-swaged*—full length
Slots regauged
Hollow legs repaired
Worn ends rebuilt and refinished
Pressers blocked
Flyers blocked
Spindles rebuilt or replaced
. . . and the exclusive tag and rust resistant Ideal Finish or your choice of four other finishes

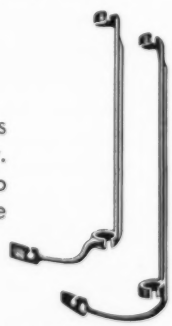
Flyer Conversion At Its Best

Ideal's Big Package Conversions enable you to produce larger packages for a minimum cash outlay. Example: a 10 x 5 can be converted to increase bobbin weight from its normal 26 oz. to up to 42 oz.

New Pressers

(Conventional Type or Specials)

Ideal's New Double Eye Pressers increase ounces, improve quality. All standard sizes from 7 x 3½ to 12 x 6½ stocked for immediate shipment.



Ideal's standard reconditioning Service is as follows:

Noses and barrel hubs realigned

Also:

- **Reconditioning Saddles and Cap Bar Nebs**
- **Metallizing Shafts and Journals**
- **Fast Service on Standard and Special Gears**

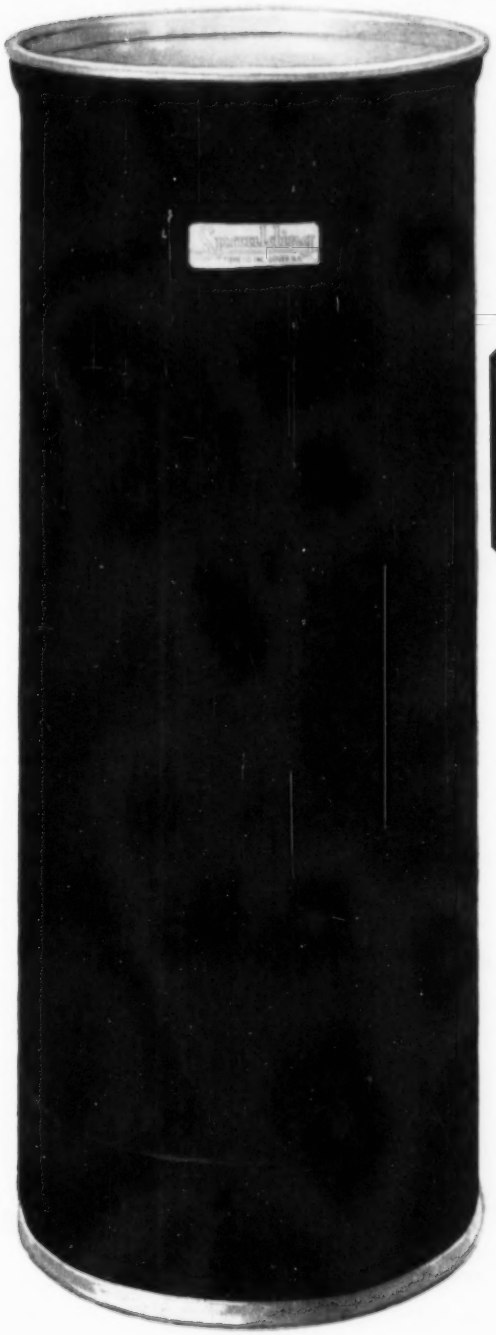
Let an Ideal technical representative assist you.

Ideal Machine Shops, Inc.

Bessemer City, N. C.

Continuous Service to Textile Mills Since 1924

EXTRA YEARS



FOR ROVING CANS AND OTHER VULCANIZED FIBRE TEXTILE MATERIALS HANDLING PRODUCTS

Spaulding
FIBRE CO., INC., DOVER, N.H.

Tough, smooth and lightweight, Spaulding Vulcanized Fibre has long been the choice for roving cans, trucks and boxes in American textile mills.

Users know Spaulding Vulcanized Fibre can't corrode or splinter — won't damage delicate fibres. They specify Spaulding again and again, assured of extra years of service under roughest use.

In short, they know they can count on Spaulding's advanced fabricating techniques and superior basic material.

For more information on these products in standard types and sizes, or made to your special requirements, write for the Spaulding Materials Handling catalog.

SPAULDING FIBRE COMPANY, INC.
DOVER, NEW HAMPSHIRE
MATERIALS HANDLING DIVISION
28 Branches in Principal Cities

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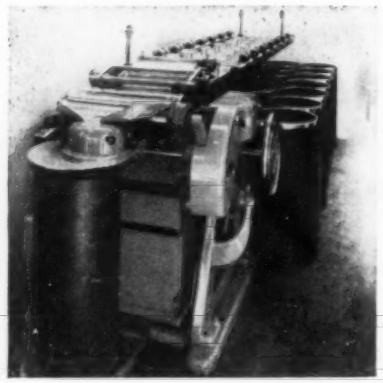
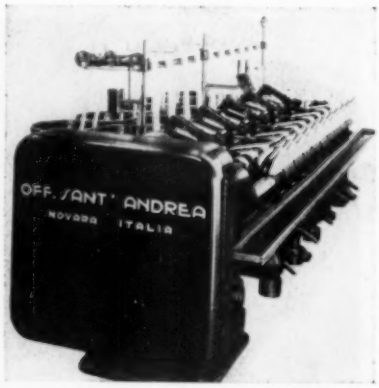


← *Rectilinear Comb Model PSL with Feeding Creel for 28 Cans 400 x 900 mm. and delivery in one can 400 x 900 mm. (15¾" x 36")*

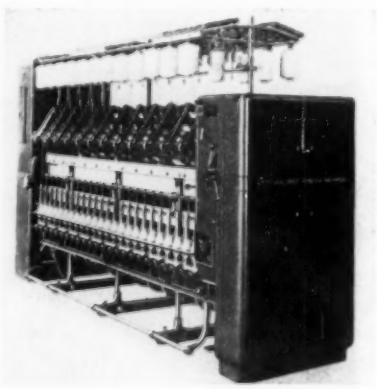


↑ *High Draft Finisher with Rub Aprons*

- **COMPLETE WORSTED PLANTS ON SHORT CUT OR CONVENTIONAL SYSTEMS**
- **ENGINEERING SERVICES**
- **SPARE PARTS IN STOCK**

High Speed Gill Box. Single head 8" Wide, 1-4 Deliveries ↓

→ *Ring Spinning Frame Model FD with Special High Draft System.*



THE MODERN SANT' ANDREA SYSTEM FOR *ALL* LONG STAPLE FIBERS

- *Hundreds of installations all over the world*
- *Over 25 years' experience*
- *Prompt service*

VICTOR RING TRAVELER DIVISION

OF SACO-LOWELL SHOPS

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Providence, R. I.
Tel. DExter 1-0737

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A. F. HOWARD, *Assistant General Manager*

Eastern Service Engineers
B. H. WATERMAN E. CRANSHAW ELMER L. CONNOR

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WALTER L. HUDSON, *Southern Sales Manager*

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FULL STOCKS in GASTONIA and PROVIDENCE
Thousands of styles and sizes of Victor Travelers are stocked in ample volume to fill promptly the regular requirement of mills in any textile area.

AGENTS IN LATIN AMERICA EUROPE AND ASIA.

Victor agents and representatives are located in all major textile centers of the world. A list of the Victor agents nearest any mill in these areas will be sent on request.

ALL TYPES Victor can furnish more than 23,000 size and style combinations in travelers for spinning and twisting all types of yarns, conventional fibers, synthetics, blends, as well as asbestos, paper, and other industrial materials processed on textile equipment. The complete line includes round and square point steel spinning travelers, round and square point grain travelers, round wire flat horn travelers, bronze and steel vertical twister travelers, and band hooks.

ALL SIZES The complete line includes flange traveler sizes ranging from 28½/0 (10 travelers weigh ⅛ grain) to 300 grains. Vertical travelers are made in sizes from No. 36 to 650 grains.

VICTOR CIRCLE-D TRAVELERS An exclusive Victor development, the Circle D Traveler has set the highest standards for efficiency, lasting economy, and trouble-free performance at top speeds, — particularly in spinning fine combed and special yarns. Because of its "floating" action, the Circle D in operation contacts the ring at only one point. Friction and heat, and wear on both ring and traveler are greatly reduced. The Circle D shape distributes yarn contact, avoids grooving and consequent yarn abrasion.

VICTOR QUALITY CONTROL maintains your original traveler specifications with dependable uniformity. Progressive checks, that far surpass ordinary methods of test and inspection, are made in Victor's master control center with the most advanced techniques and equipment. The Comparator test, illustrated above, is one of many that assure correct shape, size, weight, temper and finish. This exacting attention to quality and uniformity is an important reason why Victor Travelers are the standard choice for over 12,000,000 spindles.

VICTOR SERVICE ENGINEERS are experienced, mill-trained specialists who are fully qualified to advise you on traveler selection. Their abundant information on the latest developments in processing all types of natural fibers, synthetics, and blends is at your disposal. Write, wire, or phone for prompt service.

"Keep a step ahead" with VICTOR TRAVELERS

The New Ideal Drawing Frame

Premium Quality Sliver At Unmatched Speed

Highest Production

New Ideal Drawing Frames are producing premium quality sliver at higher speeds than ever before attained by any drawing frame. They are simple to operate and require a minimum amount of upkeep.

Compact and Flexible

Each four-delivery frame has its individual one h.p. motor, Vacuum Cleaning System, and Collector Box. Saves floor space and simplifies machine arrangement. Frame height is kept to a minimum, 57" for 36" cans and 64" for 42" cans. All parts are easily accessible.

Smooth Running

Motor is mounted on brackets off the beam, and drives an electro-magnetic clutch. This clutch drive eliminates counter shafting, line drive pulleys, and flat belting and practically eliminates vibration even at highest speeds. Revolving parts have permanently lubricated and sealed ball bearings.

Smooth Starts—Instant Stops

Push button controlled electro-magnetic clutch, through a rheostat, provides slow starts and smooth, rapid acceleration. Electric stop motions, with electro-magnetic clutch and individual signal lights, control trumpet, yardage counter, top roll, and spoon knockoffs. They assure instant stops at any frame speed.

Friction Free Coiling

Special alloy metallic coiler tube gears are suspended on heavy duty ball bearings, turning freely and not riding or dragging on a spectacle plate raceway. A redesigned coiler drive includes enclosed ball-bearing bevel gear assemblies that permit the bevel gears to run in sealed reservoirs of grease.

Ideal Automatic Vacuum Cleaning*

Each four-delivery frame has its individual cleaning system, with each drafting roll, bottom and top, being equipped with close-fitting** suction cleaning hoods, extending over the entire length of flutes and roll journals. These eliminate bottom and top clearers and wiper or rubbing parts, and all clearer and roll neck picking. Keeps clearer stubs from entering stock—removes a greater percentage of dirt, trash, and non-spinnable fibers—and mill tests show that it pulls out, as waste, less than 1% of good staple. The Ideal Vacuum Cleaning System also keeps rolls cool at high speeds.

When You Need New Drawing Frames, compare Ideal Drawing Frames with any others before you buy. We invite comparative tests.

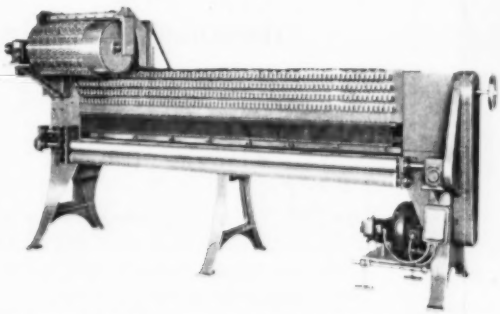
*Pat. Pending

**.005" clearance between roll and cover

Ideal Industries, Inc.
Bessemer City, N. C.

It Takes the *Right* Equipment to Get the *Right* Results!

Whatever you make in the tufted products line, whether it's bedspreads, rugs, carpets, drapery and upholstery material, etc., you'll make it better on a Cobble Machine. Production, quality and profits all go up with Cobble Machines on the job.

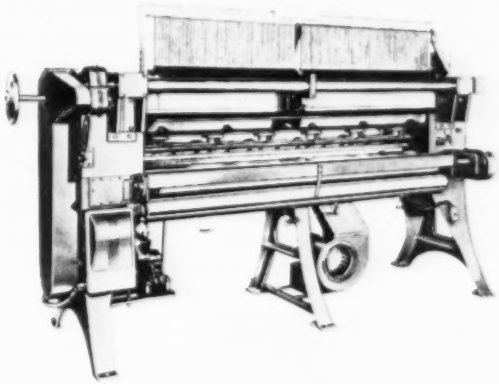


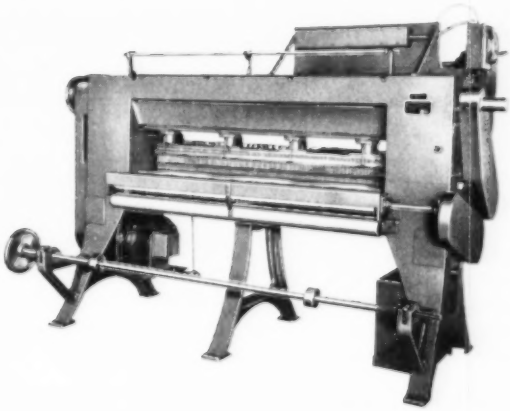
COBBLE 115" CONTROLLED-NEEDLE BEDSPREAD MACHINE

This is a 3/8" gauge multiple needle, yardage type, cut pile machine. Every needle holder is individually controlled to automatically produce patterns with areas of tufting contrasted with areas of bare sheeting. Capable of producing unlimited designs, ranging from simplest Hobnail to the most intricate Heirloom type patterns. Operates at 490 stitches per minute with a conservative 24 hour production of 400 spreads.

COBBLE ALTERNATE CUT PILE AND LOOP PILE MACHINE

This machine produces in one operation throw rugs with cut pile ground and raised loop pile figures. This is accomplished with alternate needles set to make loop pile and all intervening needles set to make cut pile. Machine is provided with Cobble standard Universal Type Pattern Attachment to control amount of yarn fed to loop pile needles and an auxiliary yarn feed to provide yarn for the cut pile needles.



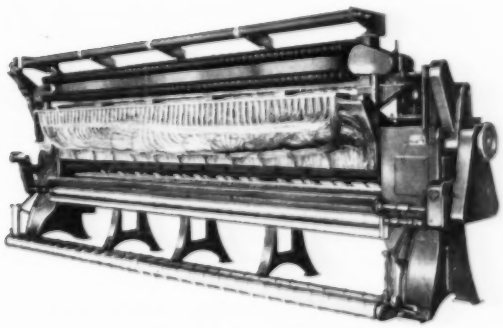


COBBLE 61" CONTROLLED-NEEDLE CUT PILE TUFTING MACHINE

This machine is offered in 3/16" gauge for producing "carved" and "overlaid" rugs. Two needles are mounted in each needle holder, thus giving a two-needle control. Primary purpose is for applying overlaid cut pile pattern to previously tufted low nap background. Can also be used for making "carved" type rugs in cut pile construction. Also available in 3/8" gauge for producing decorative overlay on fabrics such as drapery and upholstery material.

COBBLE 216" LOOP PILE YARDAGE TUFTING MACHINE

This machine has been redesigned for single-needle control for making the popular two-color carpet patterns. Yard feed rolls have been redesigned for more advantageous position, larger diameter, increased power, individual drive gears, individual sealed lubrication system, unit construction of yard roll transmissions and electro-magnetic clutch assemblies. A new and very durable pattern control system has been designed for literally billions of cycles.

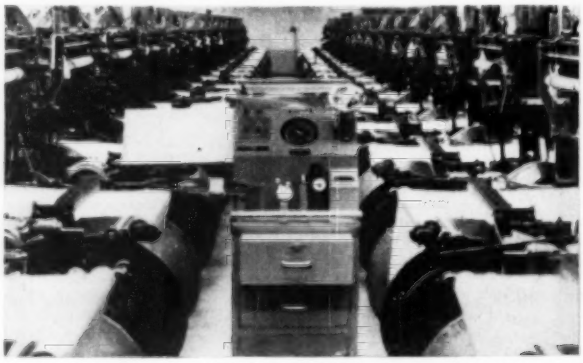


COBBLE BROS. MACHINERY CO.

RIVERSIDE DRIVE • PHONE OX 8-3481 • CHATTANOOGA, TENN., U.S.A.
GATE STREET WORKS • BLACKBURN, LANCASHIRE, ENGLAND

OVERSEAS AGENTS: ANDRE MANUEL, 82 Blvd. Haussmann, Paris 8, France - NOEL P. HUNT & CO., Pty. Ltd., 1-11 Hawke St., Melbourne C1, Australia

In all types of weaving operations . . . All Kinds of Yarns



Introducing–Slim, New, TENSION-RITE. Tension-Rite instrument shown between rows of looms. Notice "SLIM" model clears loom beams with space to space on each side. Taking shuttle-tension test AT LOOM is the *only* way to "SPOT-LIGHT" its importance.

TENSION-RITE AND TENSION-RITE METHODS

For Most IMPORTANT Weave Room Preventative Maintenance Program Possible, here are best known Tension-Rite Methods for MODERN Weave Rooms. FURTHER DETAILS FURNISHED WITH INSTRUMENT.

Pictures show "complete cycle" used AT EACH LOOM at least once each week; twice a week on difficult styles; at every cut off on rubber and costly yarn styles.

After Transferring a FULL QUILL by indexing feeler manually. Tension-Rite operator is removing Shuttle with FULL QUILL for start of Shuttle Tension Testing and Inspection Cycle.

This is important for a UNIFORM STARTING POINT of Shuttle Tension Testing Cycle. Tests can be made on any size.

Before Setting Shuttle in Rack for TENSION TEST with ½ full Quill. Tension-Rite operator is INSPECTING SHUTTLE for any UNNECESSARY WEAR, Loose Eyes or Springs, Fur, etc., that could affect amount of Tension in Shuttle.

This care pays off in WEAVING QUALITY AND EFFICIENCY.

Tension-Rite operator making SHUTTLE TENSION TEST to a predetermined Standard for a CHARACTER of yarn being used in loom.

Tension-Rite operator RECORDING on checklist chart, trouble found, and noting Loom Number any signs of UNNECESSARY WEAR on Shuttle.

TENSION-RITE

AND

TENSION-RITE METHODS

- Cuts Costs
- Improves Quality
- Increases Efficiency

QUALITY weaving at great savings – this ideal combination can be yours with an installation of "TENSION-RITE" and TENSION-RITE METHODS – the answer to *automation* in the weave room.

With the rapid increase in the use of the newer synthetic yarns each year, some efficient method of determining correct loom speeds and yarn lay-in speeds is an absolute *must*. "TENSION-RITE" and TENSION-RITE METHODS solve this problem with maximum efficiency. If used weekly, under actual weave room conditions, they pay for themselves in a matter of weeks and keep paying off indefinitely.

Under actual weave room conditions in a mill (name on request) with 1,000 looms, TENSION-RITE and TENSION-RITE METHODS was installed and accurate records were kept over a period of one year.

Typical cost-saving ranges over the one-year period were:

SAVINGS ON SHUTTLES	$8,000–$24,000
SAVINGS ON FUR	$5,000–$15,000
SAVINGS ON LEATHER, LOOM PARTS, REEDS, Etc.	$6,000–$30,000
TOTAL SAVINGS	$19,000–$69,000

Why not try "TENSION-RITE" and TENSION-RITE METHODS in your weave room as these progressive, satisfied customers have done:

Greenwood Mills (Greenwood & Mathews plants), S. C.
Textron Southern, Williamston, S. C.
Wm. Skinner & Sons, Holyoke, Mass.
Draper Corp. (Research Lab.), Hopedale, Mass.
Spartan Mills, Spartanburg, S. C.
Laurel Mills, Rutherfordton, N. C.
Spindale Mills, Spindale, N. C.
Cherokee Mills, Sieverville, Tenn.
Beaunit Mills, Rockingham, Statesville, & Lowell, N. C.
Frank Ix & Sons, Lexington, N. C.
United Merchants, Statesville, N. C.
North American Rayon Corp., Elizabethton, Tenn.
North Carolina School of Textiles, Raleigh, N. C.
(Partial List)

"TENSION-RITE," Thread Friction Testing Devices built and licensed under Serial and Patent No. 2,407,545 with other patents pending.

FOR FURTHER INFORMATION PLEASE ADDRESS ALL INQUIRIES TO J. RAYMOND FISH, SR.

TENSION-RITE INDUSTRIES

1123 ROMANY ROAD, CHARLOTTE 3, NORTH CAROLINA

THE NAMES TO REMEMBER IN RUBBER-COVERED ROLLS—

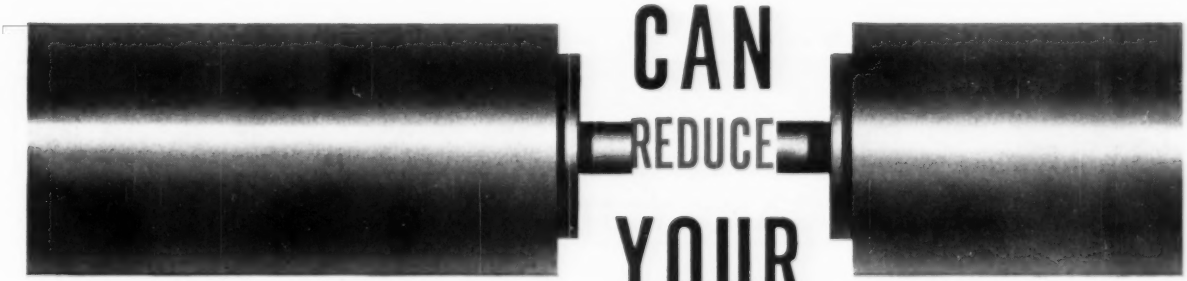
MICROROK® . . . for uniform extraction and penetration, plus very long life

PRESTOW® . . . for squeeze and other roll applications where durability is important

CRYSLER-SECTIONAL . . . for outstanding service in fulling and scouring

LEVEL-NIP . . . for exceptional uniformity of work produced by top dye pad rolls

YOU CAN REDUCE YOUR COST



. . . you can process more yards per penny spent for rolls
IF you will use the **S-W ROLL-GUARD Plan.**

We invite you to make your local S-W representative prove this in your mill, on your machinery, this month.

STOWE-WOODWARD, INC. Griffin, Georgia · Newton Upper Falls, Mass. · Neenah, Wisconsin

UP IN THE AIR OVER RISING COSTS?

Equip your mill with LONG Pneumatic Lap Control Systems . . . Bigger Laps (up to 100#!), better quality laps, less waste at ends, faster doffing, minimum maintenance, bigger profits can be yours with this new Control System. Write us for complete details.

Exclusive distributors for:
LONG Pneumatic Lap Control Systems*
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Specialists in Pneumatic and Hydraulic devices and systems
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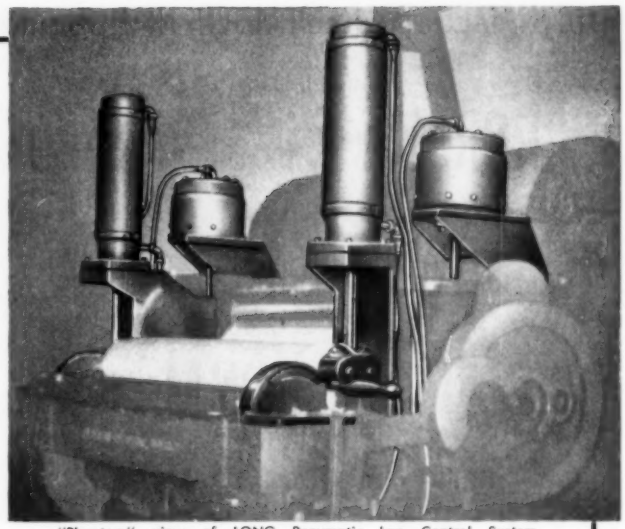

"Phantom" view of LONG Pneumatic Lap Control System installed on Picker in a Southern Mill.

LIVINGSTON & HAVEN, INC.

P. O. BOX 808, CHARLESTON, SOUTH CAROLINA, Phone SHerwood 4-3334

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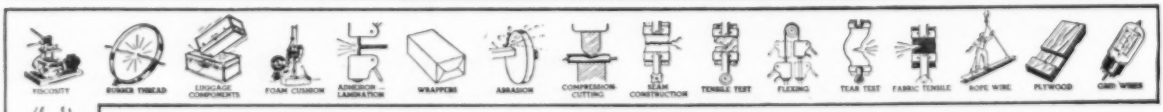

THESE MANY TESTS—AND MANY MORE

TENSILE (single fiber; yarn in single end or skein; twine; thread; cord) • TEAR SEAM CONSTRUCTION • FABRIC • HYSTERESIS • TWIST • CREPEAGE ADHESION FLEXING • BURST

The knowledge acquired during 59 years offering physical test equipment has enabled Scott Testers, Inc., to evaluate the evolving range of materials by techniques adequate to the increasingly critical informational requirements. Many of these techniques have become universally recognized test methods sanctioned by ASTM, ISO and Government bodies. This extensive knowledge, augmented by constant attendance at Technical Societies, enables Scott to quote you the latest authoritative methods, and suggest acceptable departures for special cases.

It is significant that during these 59 years, Scott Testers* have transcended all language and geographical limits, becoming the universally accepted medium of test methods and evaluations, with users in upwards of 60 countries and approximately 40% being shipped export each year.

STATE YOUR PROBLEM —
SOLVING YOUR TESTING PROBLEM IS OUR BUSINESS

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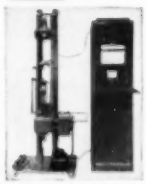
SCOTT TESTERS, INC.

100 Blackstone St., Providence, R. I.

CONSTANT-RATE-OF-EXTENSION



In addition to the ultra-precise electric weighing system, Scott brings to Constant-Rate-of-Extension Testing exclusive features of quick change of load cells, infinite range of extension speeds, rapid load registration response to specimen stress, high speed return of moving clamp, unequalled variety of clamps and holding fixtures.

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A LONG-TERM INVESTMENT IN SOUND ENGINEERING AND SKILLFUL STAINLESS STEEL FABRICATION

For more than a century, Rodney Hunt machines have helped the textile industry maintain high production and quality at a profit. Licensed under both Becco and DuPont patents, Rodney Hunt maintains a continuing program of research and development in collaboration with these and other companies to give the textile industry the benefit of the most modern processes and equipment.

DYEING

Dye Pads • Niptrol® Dye Pads
Agers • Pad Steam Dye Ranges
Tensitrol® Steamers
Tru-Shade® Combination Washing and Dyeing Kettles
Tru-Shade Sample Dye Kettles
Tru-Shade Dye Becks and Kettles
Carpet Dyeing Machines

BLEACHING

Bleaching Rangettes® (Becco & DuPont)
Bleaching Ranges (rope or open width)
Agers • Desize Ranges
J-Boxes (Becco & DuPont)
Saturators (rope or open width)
Standard Open Width Washers
Tensitrol Steamers
Tensitrol Washers (rope and open width)

WASHING

Standard Open Width Washers
Tensitrol Washers (rope and open width)
Slack Loop® Washers
Endless Felt Washers
Tru-Shade Combination Washers and Dyeing Kettles
Yankee Clipper® Washers
Tru-Shade Scouring Machines

FINISHING

Scutchers • Extractors
Niptrol Mangles • Tensitrol Steamers
Wring-Master® Squeeze Rolls

AUXILIARIES

Batchers
Compensators (rack or swing type)
Draw Reels • Entering Equipment
Folders • Scutchers
Poteyes • Roller Poteye Guides
Reels: round, hump, triangular, oval
Rolls: wood, metal, rubber, plastic, tube cast, chrome plated, special design
Tension Bars
Whirlwind® Sample Dryers
Special Machines
Latex Backing Machines
Wring-Master Squeezers

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Catalog No. 103
Bleaching ranges, Rangettes, Washers and Saturators. Illustrations, specifications and schematic drawings.

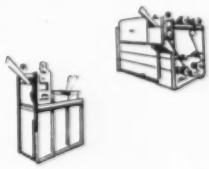
Bulletin No. 54
Niptrol Mangle

Bulletin No. 44
Textile Wet Finishing Equipment

Catalog No. 849
Tensitrol Washers. Detailed description of this unique washer and specifications.

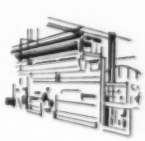
Niptrol Mangle

Tru-Shade Dye Beck

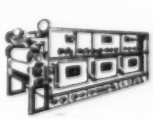


Bleaching Ranges and Rangettes

Tensitrol Washer



Tru-Shade Carpet Dyeing Machine



Tensitrol Steamer

Shaf-Tite® Rolls and Reels

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72 Mill St., Orange, Mass., U.S.A., Tel.: Kingsdale 4-2511

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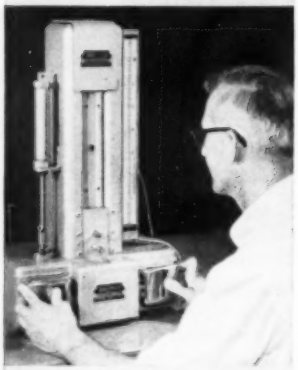

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You can be Doubly SURE WHEN YOU CHECK FIBER FINENESS WITH THE MICRONAIRE

All around the world, the Micronaire instrument and method of checking fiber fineness have been adopted as the standards by buyers, merchants, shippers, processors, mills, gins, warehouses, compresses, associations, exchanges, educational institutions—as well as governmental, institutional, association and commercial laboratories.

When you use the Micronaire, you can be sure that:

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Here is the finest bobbin holder ever designed. Adaptable to all types of creels, the Bendix Spin-Master is a toggle type bobbin holder which provides smooth, effortless creeling with every type of creel. Its $\frac{5}{8}$-inch body and automatic action permit use in all standard bobbins from 8 x 4 to 12 x 7.

*REG. U. S. PAT. OFF.

ECLIPSE* BOBBIN HOLDER

Favorite of the textile industry for many years, this spring type holder is still available from Bendix-Elmira. Adaptable to all creels, it provides an easy creeling motion and can usually be furnished for two sizes of bobbins —8 x 4 and 10 x 5 or 10 x 5 and 12 x 6, for example.

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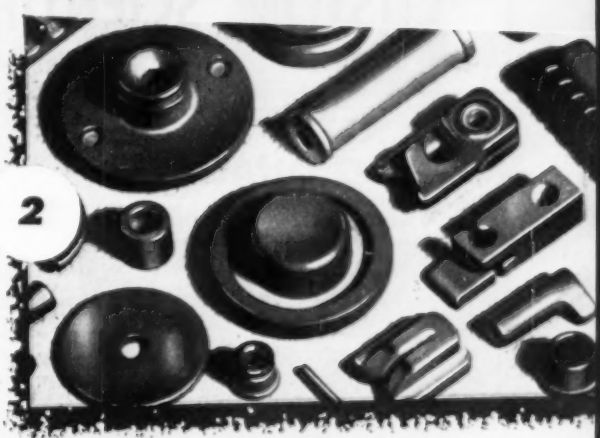
Including new, harder AlSiMag Aluminas

LONGER LIFE. For years AlSiMag guides in various materials have set long life records. Hard. Homogeneous. Highly resistant to wear.

MORE MATERIALS. AlSiMag 192 and 193 are regarded as industry standards — answer most guide requirements for producing and processing synthetic fibers. Have solved more guide problems than any other compositions. However, for top performance, some guide applications need special material characteristics, including finishes not readily changed by usage. For especially severe conditions, AlSiMag has developed a family of Alumina ceramics . . . hardest and most durable yet! AlSiMag 491, 513 and the new 614 provide a complete range of desirable traits for such exacting requirements.

VOLUME PRODUCTION. Demand has multiplied for every type AlSiMag guide. Accelerated output keeps pace. The finest production facilities operate around-the-clock, including huge, high-temperature, continuous-fire kilns which help achieve the **superior physical, dimensional** and **finish** characteristics of AlSiMag guides. A sizable plant section is now devoted exclusively to processing and firing AlsSiMag Aluminas.

AlSiMag's wider range of versatile materials permits selection of the **right** composition for every guide application! Over half a century's "know how" devoted to each order.



1. AlSiMag 192, cream colored, standard of the industry. ***2***. AlSiMag 193, metallic gray, a conductor of electricity. ***3***. Typical AlSiMag 491 Alumina guides, blue in color, which enjoy such an industry wide reputation for wear resistance. ***4***. Guides in AlSiMag 513, an extremely hard pink material developed for slightly different applications. ***5***. Guides in new AlSiMag 614, a white material — the hardest yet produced.

To meet — and usually exceed — the most exacting requirements, use AlSiMag guides. Complete information and samples on request.

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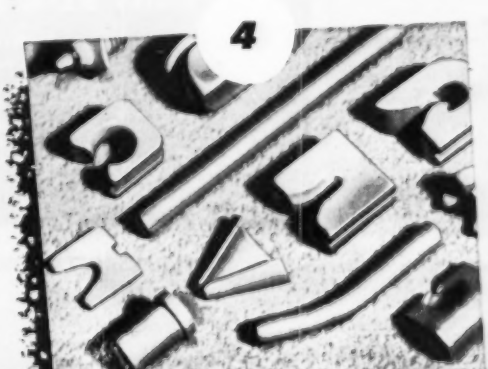
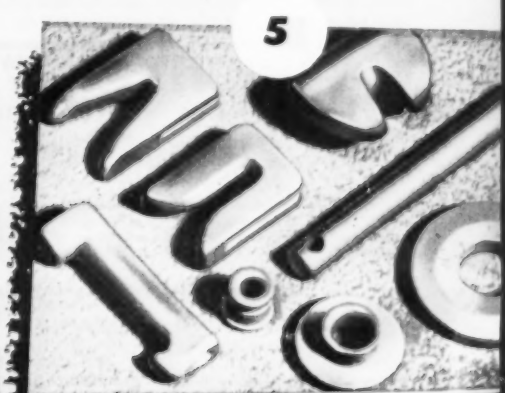
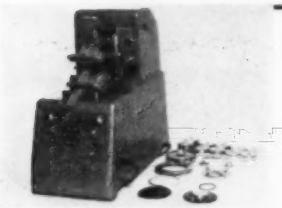




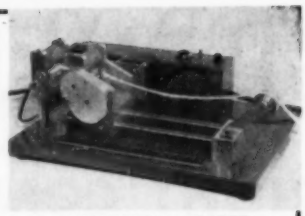


CSI STOLL QM
UNIV. WEAR TESTER

INSTRUMENTS

FOR

RESEARCH
QUALITY CONTROL
PRODUCTION

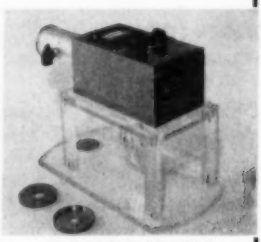


COHESION TESTER

Catalog Upon Request

Our standard products meet certain American Society for Testing Materials, Federal, Military and other specifications. We also welcome the opportunity to work on custom design, and manufacture of testing instruments of all types for individual and general needs. We will work to your ideas, sketches or blueprints. Confidential handling of your problem is guaranteed.

MECH. COTTON
BLENDER



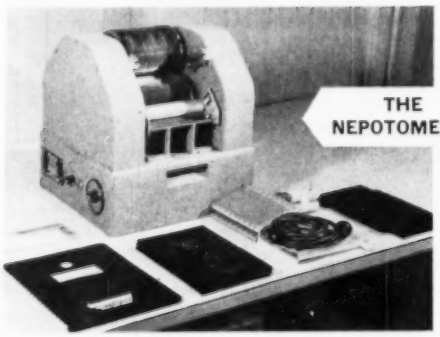
ELECTRO-STATIC
VOLTMETER

LET US DESIGN AND ENGINEER YOUR PROBLEM

CUSTOM SCIENTIFIC INSTRUMENTS, INC.

541 DEVON ST. Tel. WYman 1-6403 KEARNY, N. J.

FORECAST NEPPING QUALITIES OF COTTON



Developed at N. C. State College School of Textiles and on view there.

25 grain sample is processed in four minutes and is comparable to your standards of acceptable cotton for each quality of your yarns and fabrics. Literature and price on request.

WRIGHT MACHINERY COMPANY
DIVISION OF SPERRY RAND CORPORATION
DURHAM, NORTH CAROLINA
CANADA: Sperry Gyroscope Ottawa Limited
P. O. Box 90, Ottawa, Ontario, Canada
Special Rep. for Nepotometer:
THE FRED S. WHITESIDE CORP.
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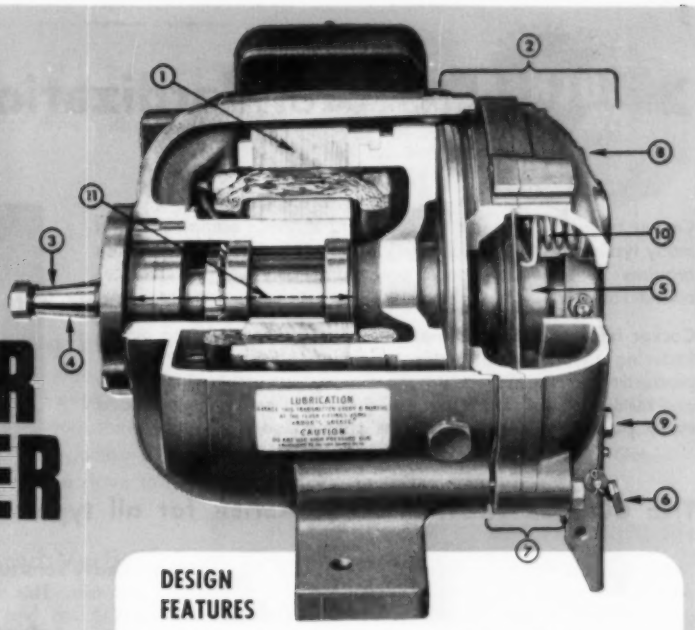
THE DEPENDABLE DIEHL

"BA" POWER TRANSMITTER

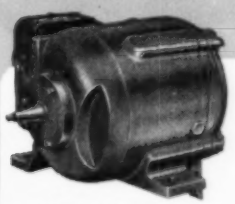
For Draper Looms

Exclusive new design features mean . . . *consistent* quality production . . . *peak* operating efficiency . . . minimum maintenance, labor and costs!



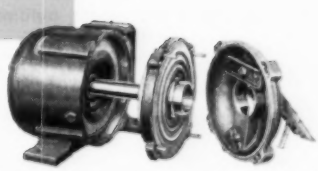
DESIGN FEATURES

*1. High inertia inverted motor provides "stored energy" for smooth, fast starts and positive picking (maximum inertia with minimum size) . . . prevents regeneration.

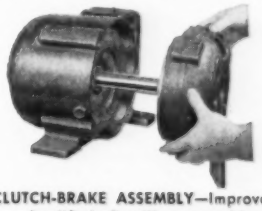


STREAMLINED FRAME
Easy to clean. Roomy terminal box.

KINETIC BRAKING ACTION
(See Feature 6)



CLUTCH-ACTUATING BEARING—A strikingly new and improved method of mounting. (See Feature 5)



CLUTCH-BRAKE ASSEMBLY—Improved, simplified. Readily removable as a unit. (See Feature 2)

The original and only loom power transmitter . . . plus many outstanding design and construction features never before incorporated in a loom drive!

Over 40,000 Diehl Power Transmitters have been in continuous operation on DRAPER LOOMS—*most of them more than six years!* The "BA" Power Transmitter is even *more* compact, *more* streamlined, *more* efficient and *more* easily installed and serviced than its famous predecessor.

It's an inverted-type high inertia motor combined with a fast, positive clutch-brake mechanism. Note the exclusive design features—the clutch-actuating bearing mounting . . . the kinetic braking action . . . the unitized clutch-brake assembly. These important advancements mean increased production . . . improved cloth quality . . . lowered operating costs . . . fewer shutdowns. *Write, wire or phone today for full information.*

plus these outstanding Features

*2. **CLUTCH-BRAKE ASSEMBLY**—Improved and simplified for positive action and ease of adjustment. Removes readily as unit for maintenance, without disconnecting motor from loom frame.

3. **PINION**—Free accessibility for installation and maintenance.

4. **SHAFT**—Large diameter, alloy steel, heat treated—assures long life, eliminates need for outboard bearing.

*5. **CLUTCH-ACTUATING BEARING**—New diaphragm mounting for frictionless clutch action, positive radial rigidity of bearing . . . eliminates fretting corrosion . . . means full self-alignment of bearing for maximum life.

*6. **KINETIC BRAKING ACTION**—For rapid, accurate stops. Particularly desirable for center fork detection looms.

7. **CLUTCH AND BRAKE ADJUSTMENT**—Simple and convenient. Provides visible check on brake alignment.

*8. **CLUTCH-SETTING INDICATOR**—Built integral with unit for instantaneous external checking of clutch setting.

9. **SAFETY LATCH**—Built integral with unit. Prevents accidental engagement of clutch.

10. **CLUTCH-LOADING ASSEMBLY**—Internally located, hence tamper-proof.

11. **SHAFT-END BEARINGS**—Arrangement simplified and improved. Two ball bearings and an extra large roller bearing assure maximum life.

** Exclusive feature—patent protected.*

Diehl

DIEHL MANUFACTURING COMPANY

Electrical Division of THE SINGER MANUFACTURING COMPANY

Finderne Plant, SOMERVILLE, NEW JERSEY

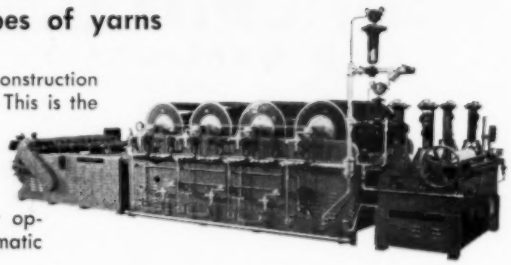
BALTIMORE · CHAMBLEE, GA. · CHARLOTTE, N. C. · CHICAGO · CINCINNATI · DETROIT · MILWAUKEE · NEEDHAM, MASS · NEW YORK · PHILADELPHIA

Standardization Cuts Costs

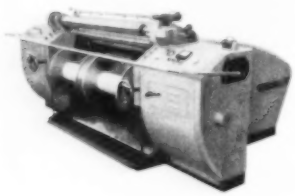
Cocker builds all types of warping and slashing equipment, and many types of finishing machines. Standardization of construction requires fewer maintenance parts and cuts your inventories considerably.

Cocker has a world wide reputation for engineering and manufacturing the finest in textile machinery. Cocker controls all production—from castings to the finished assembly—in its new and modern plant and is able to guarantee every machine and every part to perform exactly as claimed.

THE COCKER HIGH SPEED SLASHER for all types of yarns

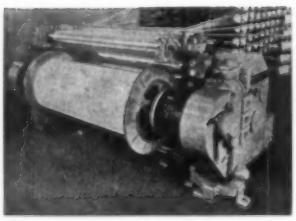


These slashers are built with 5, 7, 9, 11, and 13 cylinders. Heavy construction permits sustained and vibrationless speeds up to 150 yds. per min. This is the most modern slasher in the world, with such features as (1) Differential Compensating Friction Control which permits continuous high speeds without heating (2) The Cocker Friction, which produces hard beams and gives 20% to 30% more yarn per loom beam (3) New type loom beam carriage and air operated presser roll on head end. All operations are under automatic push button control.



New Cocker Multiple Beam Tricot Warper (MB 50W)

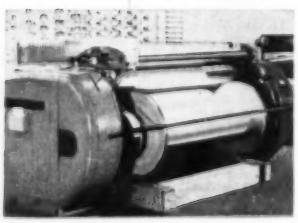
This versatile warper will handle 2—21" beams, 1—42" beam, 1—55" beam or 1—50" Raschel beam with a simple changeover from one to the other. Individual controls are in full view and easy reach of the operator. Has all modern features and safety devices. Normal sustained speeds up to 600 yds. per minute.



Cocker All Purpose Warper (SD-54)

Shown here is the Dye Beam model of this versatile warper. The air-controlled presser roll can be set to produce any desired density—hard or soft—and accurately maintains that pressure from beginning to end. It produces soft dye beams which permit lower and evener pressures in dyeing—quick and even dye penetration—and speeds of 550 yds. per min. It practically eliminates the possibility of "blown" dye beams.

Many features make this the ideal warper for any purpose. Horizontal traverse on comb and roll prevents channeling. Driving and braking beam from both ends eliminates backlash in starting or stopping. Other features are patented differential yarn speed control, electrically controlled doffing, and extra heavy bearings. Operates at over 700 yds. per min. on general warp beams.

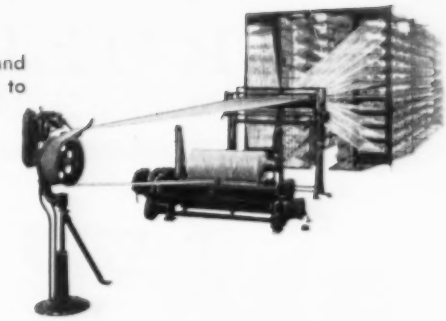


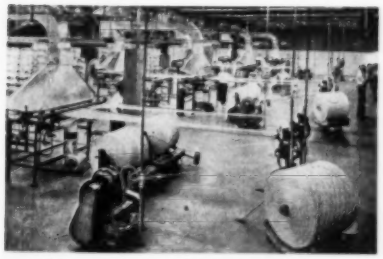
Cocker High Speed Spindle Driven Warper (SD-49)

This warper was designed especially for synthetics but will handle any type yarn. Produces unexcelled synthetic warps—from finest deniers to heaviest tire cord yarns. Takes section beams with flanges up to 36 inches diameter. The SD-49 will produce warps of any desired density at speeds up to 1000 yds. per minute.

Cocker High Speed Balling Warper

This warper is fully ball bearing with chain traverse. Automatic counter and leasing clock. Metal draw rolls. Individual motor drive with speeds up to 450 yds. per minute.

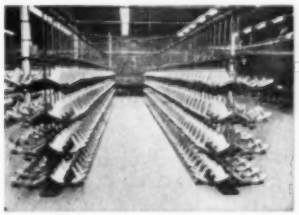




Cocker

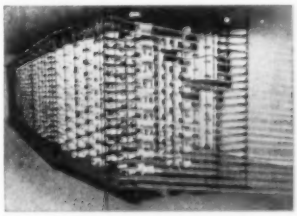
Gassing Equipment

Cocker engineers and builds complete gassing equipment. The Cocker installation shown here includes double head machines, running from 760 end horizontal magazine cone creels, built for jumbo cones. Each machine produces 600 lbs. per doff. Gassing speeds about 150 yds. per min., with adjustable drive to run up to 450 yds. per min. without gassing.

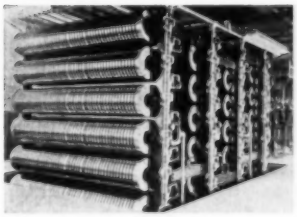


Horizontal and Vertical Cone Creels

Cocker designs and builds Magazine Cone Creels with Electric Eyeboard Stop Motions for any purpose and any type package. The adjustable tension with balloon breaker is a valuable feature of these creels.

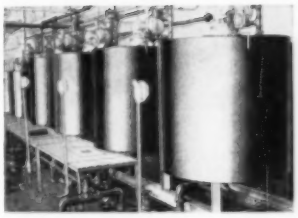


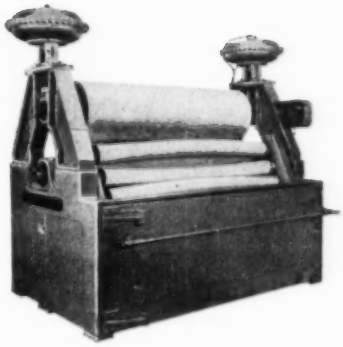
The Finest in Stainless Steel Equipment



Cocker's new and modern stainless steel plant will produce any type equipment built to your specifications —at attractive prices.

Cooking and Storage Kettles
Cloth Dye Boxes
Drying Ranges
Cylinders of all Types
Size Boxes
Warp Steam Chests
Hoods
Special Equipment





Cocker Heavy Duty Padder

FOR DYES, STARCHES, AND FINISHES (Model 157)

This new padder has unit construction, with heavy cast iron frame and heavy duty, self-aligning roller type roll bearings. Direct roll loading up to 10 tons. Can be furnished with attached cloth guiders—open or closed heating coils—low or high capacity pans and integral mounted expander rolls. Widths up to 120 inches. Attractive in appearance.

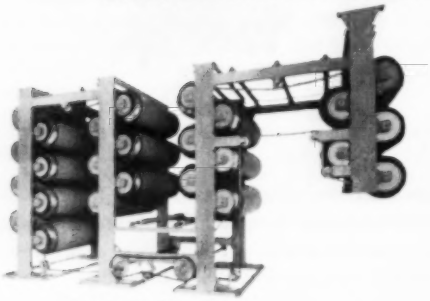
ALSO:

High Speed Narrow Fabric Warpers
High Speed Collecting Beamers
Heavy Duty Rebeamers for Unsized Warps
Warp Dyeing Machines
Special Warp Handling Equipment
Engineering Service

COCKER Machine and Foundry Co., Gastonia, N. C.

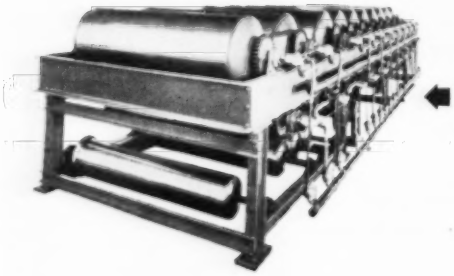
CARROLL
CLOTH FINISHING EQUIPMENT

STAINLESS STEEL CYLINDER DRYERS



Multiple Stack Vertical Dryer

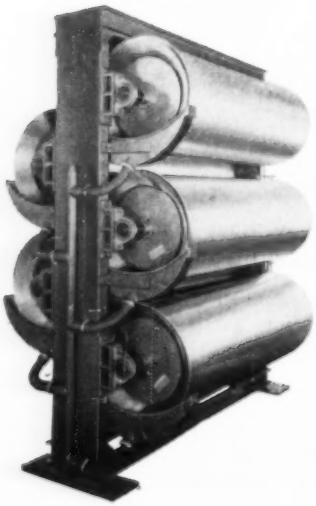
Drying Machines or individual cylinders made to your requirements in all diameters up to 12 foot and face lengths to 12 foot • Choice of drive; gear, sprocket or "V" belt • Choice of operating steam pressures, several types of cylinders to choose from.—Cylinders and structural frame work can be adapted to existing equipment • Light weight cylinders for higher pressures.



Horizontal Cylinder dryer also shows special application with cooling cylinders below.

Cylinder Dryers for various steam pressures.

Our products are designed and built to comply with the requirements of the ASME Code and we are authorized to apply the appropriate Code symbols



TYPE W OPEN END COOLING CYLINDERS

Cooling Cylinder Machines — Vertical or Horizontal Arrangement.

• Individual Cylinders a variety of types and sizes.

• OUR PRODUCTS INCLUDE

Cylinder Dryers • Cooling Cylinders
Slasher Cylinders • Back Dryers
Narrow Fabric Dryers •
Narrow Fabric Padders • Dye Tanks
Mixing Kettles • Carrier Rolls
Jacketed Cylinders • Compensators

J.E. CARROLL & CO.

Office and Plant located at 100-114 Cambridge Street, Lowell, Massachusetts

---

cut production COSTS 4 ways! ... with

1 **SAVE by eliminating expensive spoilage!**

2 **SAVE by cutting handling costs, reducing damage and loss!**

3 **SAVE by reducing costly equipment repairs!**

4 **SAVE with the low initial and operating cost of the Mecho Air Guider!**

Hundreds of finishing plants bless the simplicity of operating a Mecho Guider . . . no complicated counter-weights or linkages! The sensitive selvage finger points the way to important savings! It handles every imaginable fabric from the lightest to #8 duck; is used in plants handling woven and non-woven fabrics, semi-rigid plastics, artificial leather, rubber, felt and gauze. Constant cloth alignment is maintained at all times.

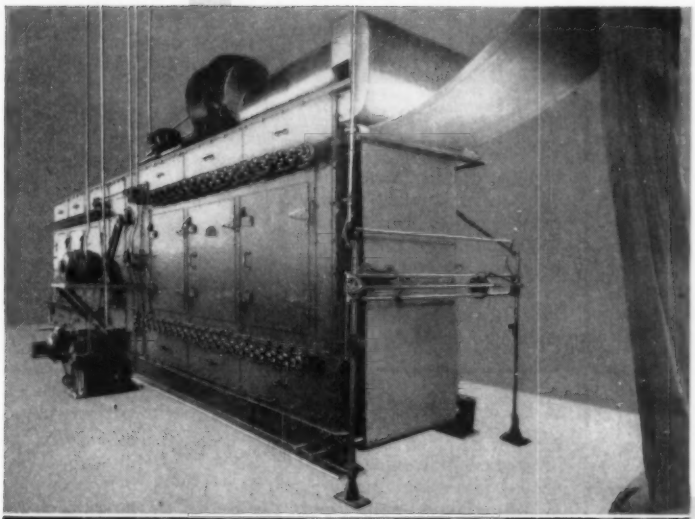
The precision-engineered accuracy of the Mecho Air Guider, guiding to within an eighth of an inch and ranging from 1 to 400 ypm, is unsurpassed! Stainless steel, acid and moisture-resistant units with sealed bearings are also available.

Mecho offers a valuable Guiding Service. Phone, wire or write for your catalog today. Learn how the Mecho Air Guider can save dollars for you.

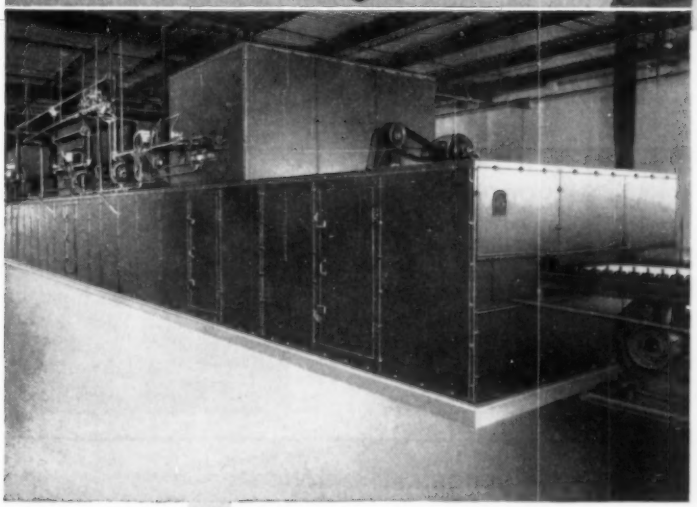
GUIDER SPECIALTY COMPANY
431 W. Rock Ave.
New Haven 15, Conn.

IHE IMPROVED RESIN CURING

REDUCES COSTS. . . SPEEDS PRODUCTION



The new, improved IHE Resin Curing Machine affords a wider heat range with ability to maintain any temperature up to 450° F. These machines are direct-fired with either gas or oil which affords a more positive temperature control. Forced exhaust removes resin fumes. The exclusive IHE tension control features make it ideal for embossed goods, and for the curing of water repellent and wrinkle resistant resin finishes. We also design and manufacture machines for curing latex-treated fabrics. If you think your present resin curing costs are too high, or if you have other curing problems, IHE engineers can survey your situation and make recommendations.



IHE TENTER DRYERS

FOR PERFORMANCE THAT MEANS PROFITS

This new, recirculating type Tenter is equipped with a system of nozzles that have been especially designed by IHE engineers to obtain maximum efficiency from the drying gases. This machine is made for frames of any width, and in lengths from 20 ft. to 120 ft. Multiple doors give easy access to all parts of interior. Direct firing with gas or oil-gas, provides a much wider temperature range, gives greater drying capacity per foot of dryer than has ever been possible with even the most efficient steam units. Plan now to have IHE put your tenter drying operation on a plus-performance, full-profit basis.

WRITE TODAY. Get the facts about the type of IHE installation you need. Our engineers will be glad to assist in working out details for you.

INDUSTRIAL HEAT

ENGINEERING COMPANY

121 CLEVELAND STREET, GREENVILLE, S. C.

MANUFACTURERS OF: **CLOTH DRYERS • PRE-DRYERS • TENTER DRYERS • SELVAGE DRYERS • RESIN CURING MACHINES • PLAITERS STEAM-TO-DIRECT FIRING CONVERSION UNITS • BRUSHING MACHINES • ROLLER COATERS • DESIZING STEAMERS • BATCHERS**

Proctor

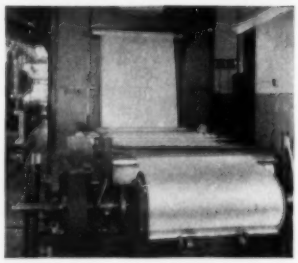
profit making developments for the textile industry

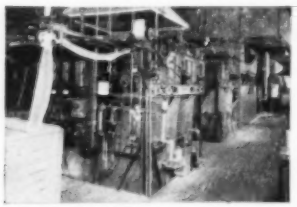
PROCTOR ENGINEERED BLENDING SYSTEM

Proctor Engineers, pioneers in the development of automatic blending equipment, are prepared to design a system, either partially or fully automatic, to meet the needs of any mill, for blends of any size or type.

HOT AIR SLASHER DRYER

Designed for maximum production of quality yarn, capacity varies from 900 to 1500 pounds of dry warp per hour. Features patented parallel flow nozzle system which eliminates rolling and tangling of the yarn.



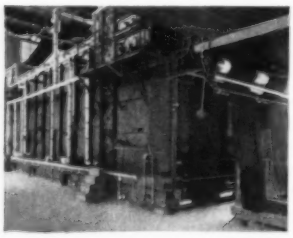


CONTINUOUS BLEACH RANGE

This new range for processing tubular knit goods pays for itself in as little as 1½ years. Eliminates sorting of batches for color, produces highest quality knit goods at greatly increased speeds.

EQUIPMENT FOR NON-WOVEN FABRICS

Proctor can now offer complete processing ranges, including equipment for opening, blending, web-forming, bonding, drying and curing, slitting and winding.

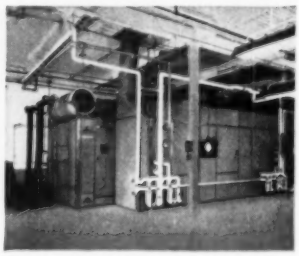


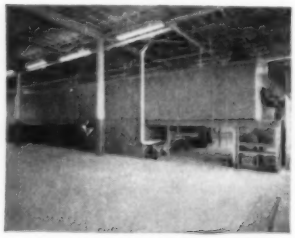
LOOP AGER FOR PRINT GOODS

This advanced system for aging vat dyed print goods eliminates aging re-runs, offers savings in direct labor, dyestuffs, glycerin and steam, often yielding profits equal to original investment in one year.

LOOP DRYER-CURERS

Greatest drying and curing uniformity ever offered, maximum production capacity, less down time through elimination of many maintenance operations, and the smoothest interior for improved cleanliness.





CARPET DRYER

This versatile machine dries all types and weights of carpet from any wet condition—dyed, back-coated, steamed, face-treated or anti-soil treated—all in one operation.

TENTER HOUSING

Offers the greatest drying capacity per foot of length ever offered the industry with 80% to 195% more drying capacity than older, conventional tenter housings. Duplex air circulation gives highest uniformity of drying or curing.

PROCTOR & SCHWARTZ, Inc.

Philadelphia 20, Pa.

Sales Offices: 600 Waukegan Rd., Glenview, Ill. (Suburb of Chicago) • 49 Weybosset St., Providence 3, R. I. • P. O. Box 1361, Spartanburg, S. C.

Reclothing Service: 154 W. Walton Street, Chicago 10, Ill. • Spring & Saratoga Sts., Cohoes, N. Y. • 275 Needham St., Newton Upper Falls, Mass. • P. O. Box 1361, Spartanburg, S. C.

Manufacturers of Textile Machinery and Industrial Drying Equipment

SLACK SELVAGE CONTROL

Mount Hope
SLACK SELVAGE ELIMINATOR
Prevents cloth damage on shearing machine — eliminates cut selvages and wrinkles. Assures even coating on coaters. Send for bulletin #SSE.

WRINKLE REMOVAL

Mount Hope
"FREE WHEELING" EXPANDER
Assures exact, constant width-wise stretch, for uniform full width. Eliminates wrinkles and distortion, maintains uniform tension. VARI-BOW EXPANDER (not shown) is adjustable to precise requirements while at full speed. Send for bulletin #8244.

WRINKLE FREE WINDUP

Mount Hope
BATCHER EXPANDER
Designed to give smooth, wrinkle-free rolls with material spread to full width. Controls firmness of rolls.

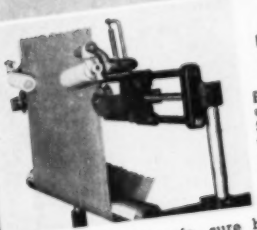
10 EASY WAYS TO GET MORE OUT OF YOUR PRESENT MACHINERY...with CLOTH HANDLING EQUIPMENT

Mount Hope

You can improve both the efficiency and operating economy of practically every machine in your mill through the simple installation of MOUNT HOPE "Free Wheeling" Expanders and other equipment. These automatic production aids save time and labor, reduce seconds, and prevent cloth damage at virtually every stage of dyeing and finishing operations. The ten applications shown here are typical of successful installations in modern mills everywhere. We'll be happy to give you complete details on any of them . . . or help in the solution of other web-control problems you may have. Write for literature. Better yet, ask to have a MOUNT HOPE Engineer drop by and show you "on-the-spot".

MOUNT HOPE MACHINERY CO.
55 Fifth Street
Taunton, Mass., U.S.A.
PLANTS IN TAUNTON, MASS. and CHARLOTTE, N. C.

GUIDING

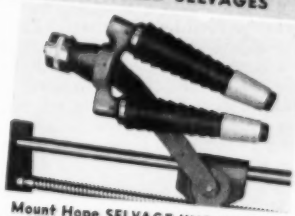


Mount Hope
PRECISION GUIDERS
For precise guiding of any fabric, paper or film. Completely automatic. Nip rolls covered with soft, rubber-like "MH-31" for gentle, safe, sure handling. Saves fabric—time—money. Send for bulletin #8793.

PRECISE ALIGNMENT

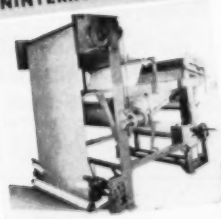
Mount Hope
FLOATING ROLL GUIDE
A "magic touch" and nip-free rolls provide safest, most accurate alignment control . . . AUTOMATICALLY keep TEXTILES within CLOSER LATERAL LIMITS.

NO CURLED SELVAGES



Mount Hope SELVAGE UNCURLERS
No more production-slowing curling of selvages. This Mount Hope device holds selvages open and flat when feeding nip rolls or tenters. Perfect for all types and weights of fabrics. Send for bulletin #SU-3.

UNINTERRUPTED PRODUCTION



Mount Hope
CONTINUOUS ROLL FEED
No more profit-draining shut-downs to change rolls. Has non-lapping nip rolls for continuous production and tension maintenance, while sewing on new rolls. Send for bulletin #8381.

NO BOWS or SKEWS

Mount Hope
BOWED AND SKEWED WEFT STRAIGHTENER
Solves a tough problem, as it straightens bowed and skewed weft thread with push-button control — saving production re-runs. Send for bulletin #8245.

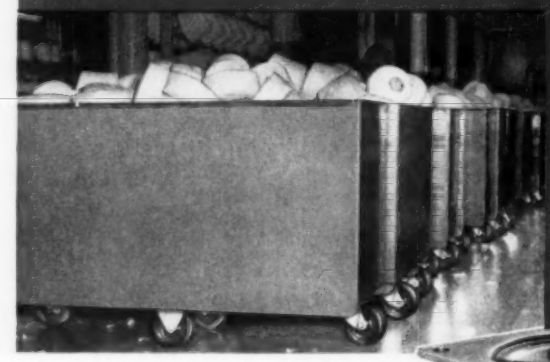
CLOTH OPENING

Mount Hope
NON-STOP, TWIST-FREE CLOTH OPENERS
Mount Hope Cloth Opening Equipment is indeed kind to all fabrics — gentle, safe, sure. No beating action — no sharp edges. Includes GUIDERS, OPENERS, and the famous Mount Hope ADJUSTABLE TENSION SQUEEZERS, OVERHEAD SHEAVE and TURNTABLE DE-TWISTER. Send for bulletin.

NOELTING

Faultless Casters

for top handling speed with low manpower and maintenance

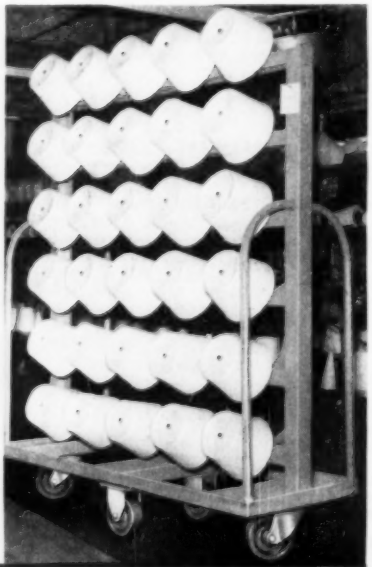


Production of knitted cloth requires frequent movement of materials. This means a materials handling system that is both fast and reliable. A 3-unit integrated system of castered trucks, developed by one mill, makes exclusive use of Faultless 931-6 Swivel Plate and 9731-6 Rigid Plate Casters to: 1.) move cones of yarn from spinning frames to humidifying rooms; 2.) transport moisture controlled cones of yarn to knitting rooms; and 3.) handle heavy rolls of knitted cloth from knitting room to storage areas. A selection that was made based on the high load rating, ease of rolling and floor protection characteristics of Faultless Casters.

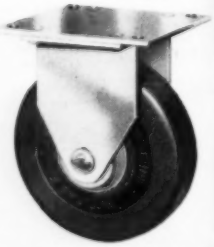
Series 900 Caster with Double Ball Bearing Swivel that outperforms the ordinary kind. Design features include complete choice of wheels to suit floor surfaces, loads and operating conditions; 2 full rows of hardened ball bearings rolling in hardened, lubricated raceways; full drawn steel horn formed for surplus strength.

Ask Your Distributor

Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your mill. Both are listed in the phone book Yellow Pages under "Casters," beneath the Faultless heading.



NOELTING Faultless Casters



Complete information on Faultless Casters and Wheels for textile use is available. Write asking for Catalog 8157, no obligation.

Series 9700 Rigid Plate Caster has same overall heights and load capacities as the 900 Series Swivel type. The heavy steel top plate and sides are formed and riveted into a single unit. Full choice of wheels.

Faultless Caster Corporation

EVANSVILLE 7, INDIANA

Offices in Atlanta, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Greensboro, S. C., Grand Rapids, High Point, Indianapolis, Los Angeles, New Orleans, New York, [illegible]

The **EMBLEM OF QUALITY METAL SHIELDS**

For Spools and Bobbins

Anderson Shields are dependable protection against chipping, splitting, and breaking of spools, bobbins, and paper caps. Even the most minute details are carefully worked out to make Anderson the highest in precision, the smoothest in finish, the best in performance. The Anderson Emblem is your assurance of the finest shields you can buy.

Insist on Anderson when you order metal shields regardless of where you buy spools and bobbins.

Ask for the New Patented TOP DRIVE BUSHING-guaranteed to stay Exact Fit for "Bobbin Drop On Spindles".

TEXTILE SHIELD CO., INC.

J. N. ANDERSON, Treasurer

LAWRENCE, MASS., U. S. A.

THREAD CONES · YARNS · FABRICS · SUITINGS
WADDINGS · BLANKETS · BEDDING · CARPETING

Whatever your products, you can package for sales advantages with

THILCO "Brand Name" PROTECTIVE PAPERS

Overall decorated roll wrap

Don't worry about protection. Thilco TEXTILE Wraps for any specific requirement give you the very best. *But that's not all by any means!* Thilco papers can be colorfully PRINT-DECORATED to give you all the benefits of "Brand Name" packaging at all merchandising levels. And, you can get all this with its many other sales values *for just a few cents more* than the cost of plain, unidentified wrappings! Thilco TEXTILE Wraps run the gamut from lightweight, special treated tissues and krafts to heavy-duty protective wraps for transport and storage.

Decorated Waxsorb cone wrap

COMBINE PROTECTION WITH IDENTITY FOR THESE IMPORTANT SALES ADVANTAGES:—

- Provide brand name identity through entire distribution sequence
- Help trade-up product's quality
- Add colorful eye and buy appeal
- Increase prestige value
- Stimulate repeat orders
- Reduce labeling and packaging costs
- Simplify inventory control
- Eliminate "look-alike" competition
- Provide low cost "traveling" advertising

FREE SAMPLE KIT
Contains all popular grades of Thilco Textile wraps—write today.

THILCO
Functional Papers
FOR TEXTILES

OFFICES
NEW YORK
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Decorated protective fabric wrap

THILMANY PULP & PAPER CO. · KAUKAUNA · WISCONSIN

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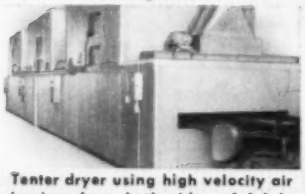
Lanly TEXTILE Dryers & Ovens

PLAY A MAJOR PART IN THE HEAT PROCESSING OPERATIONS of the TEXTILE INDUSTRY

STEAM • GAS • OIL and ELECTRIC HEATING

Typical Non-Woven Drying and Curing oven



Tenter dryer using high velocity air impinged on both sides of fabric to give uniform and rapid drying

Oven for curing impregnated fabrics

Conveyorized Carpet Dryer

OVENS for

- Bleaching
- Dyeing
- Curing
- Coating
- Carbonizing
- Heat or Twist Setting
- Cleaning and Annealing
- Glass Fibers
- Non-Woven Processing

Dryer Types

- Loop
- Multiple Pass
- Roller (Hot Flue)
- Tower
- Conveyor
- Tenter
- Batch

Get a LANLY Proposal

Upon receipt of information covering your needs, Lanly will submit recommendations and a proposal covering an oven or dryer that will be thoroughly guaranteed as to construction and performance.

WRITE FOR CATALOGUE 570-T

THE Lanly CO.

TEXTILE OVENS

2800 Euclid Avenue • Cleveland 15, Ohio

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A-P-T Yarn Carriers

Modern Synthetic Bobbins "Serve you Better—Longer"

Warp Bobbins of PERMANENT PRECISION

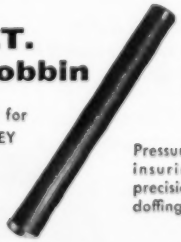
On this metal-tip-and-base bobbin, APT made its fame, designing it for the sleeve type, now known as the American Type Spinning. This bobbin has for years been the staple for this type of spinning, and in our new Southern plant we have been able to produce it at a substantially lower cost to the customer.

This is a deluxe bobbin for those who require the very finest standards of operation and recognize the value of the efficiency gained by this super-precise bobbin. Has heavy plastic tip fused by A.P.T. "Plasti-weld" method to form a unit of superior alignment and concentricity — permanently assured.

A.P.T. *synthetic* warp bobbins successfully combine the unique advantages of various materials to "serve you better — longer".

A.P.T. SG-1 Bobbin

preferred for GWALTNEY FRAMES



Solid plastic tip withstands hardest mill usage

Pressure molded seat insuring permanent precision — super-easy doffing.

Bring your bobbin problems to A. P. T.

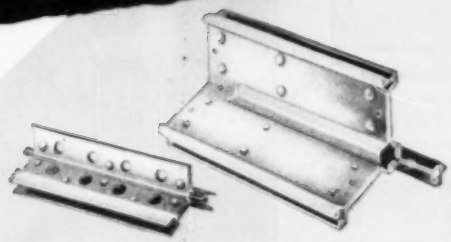
American Paper Tube Co.

Established 1898

Sales Offices: Woonsocket, R. I., Greenville, S. C.
Manufacturing Unit: Port Gibson, Mississippi

An Experienced, Dependable Source for *textile* MACHINERY MAINTENANCE PARTS

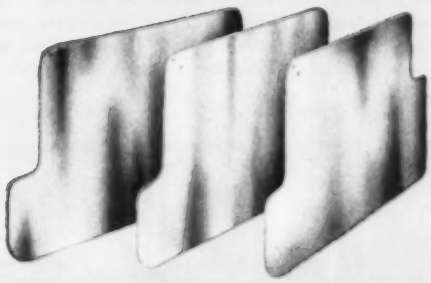
Perforated Spinning Spools



Spinning Spool Holders

"Serving Industry Since 1895"

SPECIALISTS IN STAMPED ALUMINUM COMPONENT PARTS, TRIMS, AND ROLLED FORMINGS.



Separator Plates

Aluminum Stampings built to Your Specifications

A textile mill must have confidence in its source for expendable parts. That's why so many mill operators, for so many years, have specified us as suppliers of their custom-made aluminum stampings for mill maintenance.

These items, and others in this field, are typical of the custom built parts we are capable of supplying.

Please send us blueprints and details and let's get together on your needs.

MIRRO
THE FINEST ALUMINUM

MIRRO ALUMINUM COMPANY

Formerly Aluminum Goods Manufacturing Company

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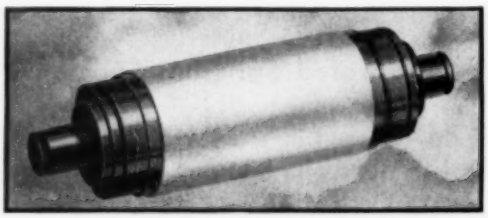
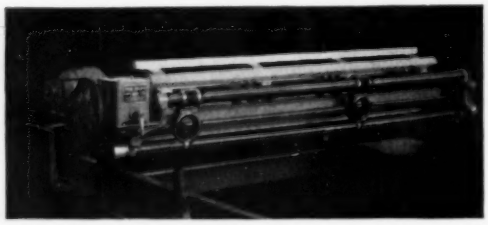
RECOGNIZED THE WORLD OVER

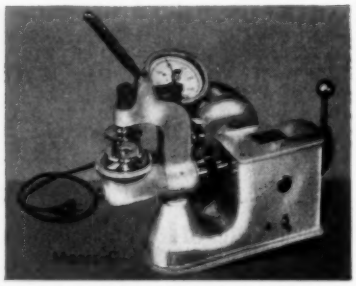
Calender Rolls . . . Schreiner, Chasing, Rolling, Silk Finishing, and Embossing Calenders . . . Rubber Thread Covering Machines . . . Seam and Slub Detectors . . . Cloth Pilers . . . Special Drying Machines . . . Mangles . . . Padders . . . Squeezers . . . Automatic Winders . . . Dye Jigs . . . Hydraulic Power Units . . . Mullen Testers.



When you specify Perkins Rolls, you enlist in your service more than the product of good equipment . . . you receive a plus factor, the outstanding ability of men whose skill and ingenuity has made Perkins world leader in the roll industry.

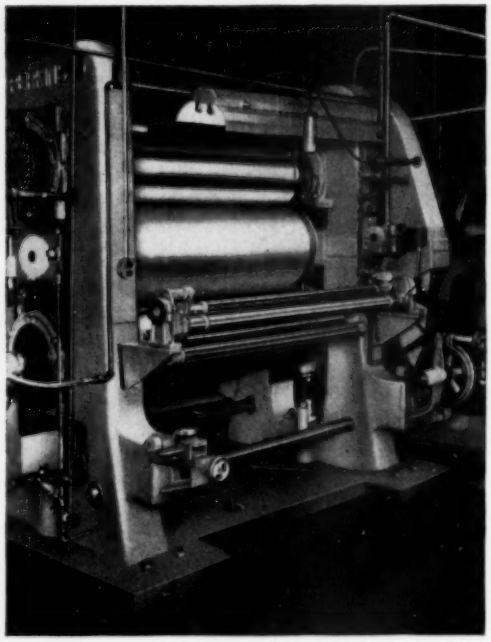


Perkins Bin Pilers are supplied with one, two, three or four traveling pot-eyes, and in widths up to 120". A real labor-saving unit . . . over 1,000 installed and operating.

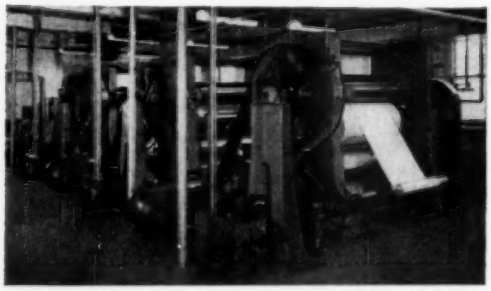


PERKINS MULLEN TESTER

Mullen Testers are absolutely accurate, uniform and positive for ascertaining exact bursting strength of textiles.



Perkins Calenders, individually designed and custom-made, have been long known for their high factor of safety, simplicity of design, long record of service. The three-roll 100-ton hydraulic rolling calender shown is equipped with the famous Perkins Seam and Slub Detector. Perkins Calenders are built to meet definitely the individual requirements of finishers of textiles.



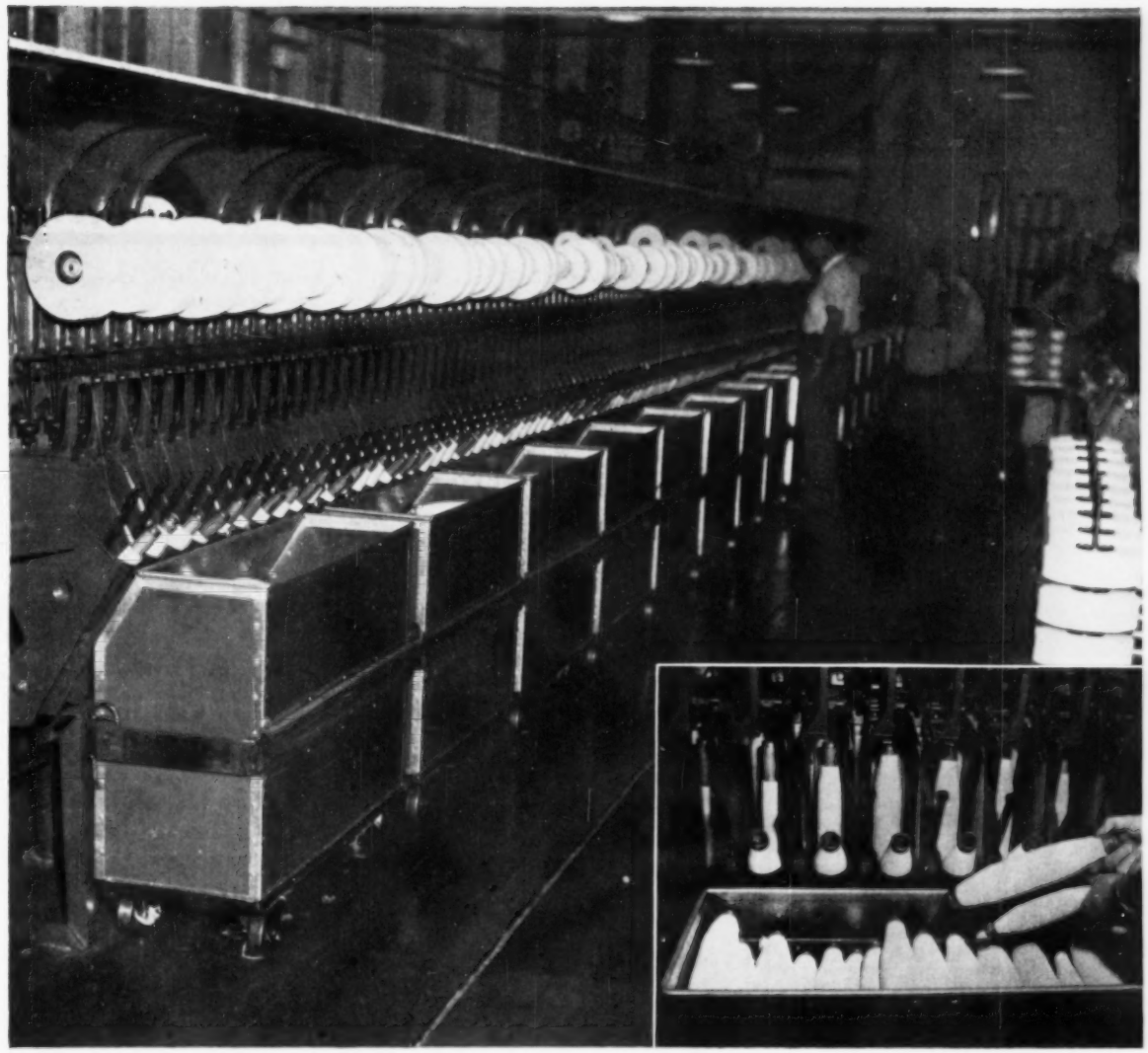
Three Perkins 100-ton hydraulic friction calenders. Anti-friction bearings throughout, nitrogen loaded accumulators, variable speed V-belt drives, friction chain drives, friction ratio 3:1, friction let-offs, slip belt wind-ups.

B. F. PERKINS & SON, INC.

Textile Finishing Machinery

HOLYOKE • MASSACHUSETTS

Southern Sales Office • 1609 Liberty Life Bldg. • Charlotte, North Carolina



REDUCE BOBBIN HANDLING

with FISHER TRUCKS – tailor-made to . . .

• DOFF • STORE • SERVE AS TRAYS For BARBER COLEMAN Spooler

These versatile, mobile Fisher boxes are being used as doff boxes, storage boxes and spooler trays. A special C-Type Barber Coleman Spooler has been changed specifically to meet requirements of the mill. Spring-bottom, Fisher designed boxes fit in place of the trough usually found on spoolers.

Decreased handling of bobbins is one of the many advantages of this installation. The boxes are used to doff from spinning frames, and conveniently stored until an operator pushes them directly to the spooler. Attached to the mobile box by means of a clip is a smaller box to carry empty bobbins when doffing spinning. . . . Special hooks are affixed to each box enabling them to be fastened end-to-end or side-by-side for easy moveability. *These boxes will increase production and decrease costs.* Patents are pending on the design and mechanical features of these Fisher manufactured boxes.

Each job is specifically designed according to the size and number of bobbins to be doffed . . . sides and ends made out of non-warping material to increase efficiency of the floating bottom . . . quality construction throughout . . . all boxes equipped with ball bearing casters . . . sloping sides designed to fit the spooler pocket . . . optional equipment includes lock-down device for floating bottom to increase efficiency in doffing.

INTRODUCED IN 1958 — FISHER MANUFACTURING COMPANY HAS DESIGNED AND MANUFACTURED A SIMILAR BOX ADAPTED TO WINDERS. COMPLETE DETAILS ON REQUEST.

Manufacturers & Designers of Quality Materials Handling Equipment Since 1945

FISHER MANUFACTURING CO. Hartwell, Ga.

Telephone FRanklin 6-2125

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KNOCK OUT STATIC!

YOU WON'T MISS WITH A SIMCO "MIDGET"

There is a SIMCO "*Midget*" static bar designed for every textile application . . . *guaranteed* to eliminate static . . . safely . . . effectively . . . inexpensively! New *shockless* bars are also available. Equip your machinery *now.*

the SIMCO company
920 Walnut St.
Lansdale, Pa.

LOUIS P. BATSON *Company*

Wholesale Distributors and Manufacturers

P. O. Box 772 GREENVILLE, SOUTH CAROLINA TEL. CEdar 2-7691

ShuR-CusH Vibration Pads—Coated and Plain
ShuR-TufF Harness Strapping
Woven Felts—Clearer Cloth, Roller Cloth, Pressure Roll Felt
Pressed Felts—Rolls, Sheets, Strips
Felt Cut Parts—Box Fronts, Race Board Coverings, Wicks, Washers, Special Shapes from Pressed or Woven Felts
ShuR-Tuff Wire Center Harness Cords
Hookless Harness Adjustors—Cam, Dobby, Gem
Dobby and Gem Head Stirrups, Loops, Jackeyes
Positive Adjustment Jack Sticks and Parts
Neva Wear Case Hardened Jack Hooks
Turnbuckle Harness Adjustors and Regulators
Adhesives and Cements for All Purposes
Sheaves—Plastic, Wood, Aluminum
Static Eliminators for All Types of Machinery
Hand Dryers for Replacing Paper Towels
Laminated Picker Sticks, Sweep Sticks, Power Adjustors
Pickers, Check Straps, Belting
Temple Rolls, Shell Rolls, Beam Barrels
Shuttle Fur, Sheep Skin, Cone Pads
Clear Plastic for Loom Aprons, Covers, Dividers
Leece Rods, Warp Clamps, Loom Flags
Castings—Aluminum, Brass
Mats and Matting—Fatigue, Door, Runner
Fancies or Fancy Rolls for Cards
Jacquard Twine and Neck Cord
Set Mark Preventors for Looms
Harness Connectors—Fibre, Fabric, Leather
Bumpers—Rubber, Leather, All Types
Yarn Tinting Devices for Looms and Quillers
ShuR-TufF Lug Straps—Canvas, Rubberized
Shuttle and Bobbin Protectors for Looms
Time Clocks and Watchmen's Clocks
Shuttle Pegs and Bristles
Oilless Bushings—Wood, Bronze
Lug Hold Ups—Wood, Aluminum, Malleable Iron
Take Up Roll Covering—All Types

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KLAUDER WELDON GILES MACHINE CO.

ADAMS AVENUE AND LEIPER STREET

FRANKFORD, PHILADELPHIA 24, PENNSYLVANIA

DYEING MACHINES

PRODUCTS

SKEIN YARN DYEING MACHINES: Various types for Scouring, Bleaching, and Dyeing Wool and Worsted yarns, and Slubbing, also Cotton, Silk, and Synthetic yarns.

YARN SCOURING MACHINES: Continuous or Apron type in All Stainless Steel construction.

RAW STOCK DYEING MACHINES: Various types for dyeing Raw Wool and Cotton, Waste and Rag Stock, also for Stripping and Bleaching.

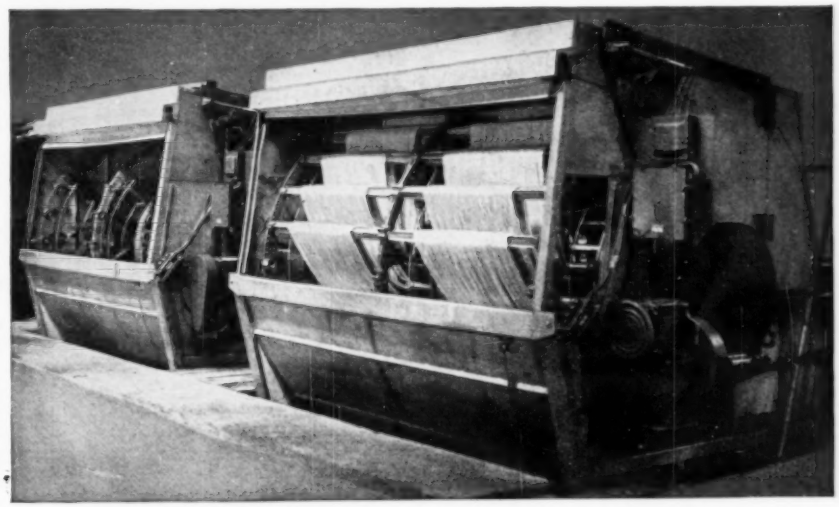
HOSIERY, GARMENT & HAT DYEING MACHINES: Rotary and Paddle Wheel Type.

MACHINE DYESTICKS: of Wood and Stainless Steel. The latter are more permanent—10 times the life of wood sticks and especially advantageous in the processing of Knitting Yarns, Boucle, Ratinet and Frill Yarns.

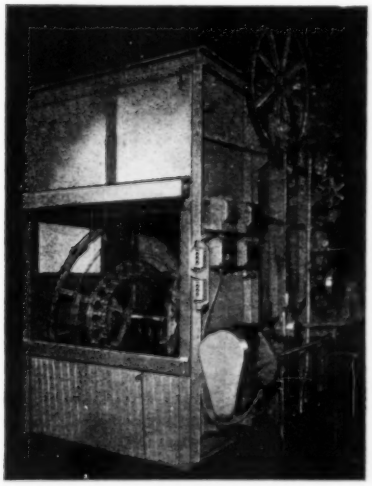
REPLACEMENT PARTS: for all Klauder Weldon Giles Machines.

DYE TUBS: Self Supporting Stainless Steel replacement or conversion of old kettles, also of wood either Lined or Unlined.

SPECIAL DYEHOUSE EQUIPMENT: In Stainless Steel construction.



2—500 lb. Capacity Stainless Steel Non-Hoist Type Skein Dyeing Machines.



250 lb. Capacity Stainless Steel Hoist Type Skein Dyeing Machine.

NEW PADDLE WHEEL DYEING MACHINE . . . of all stainless steel construction is designed for the successful dyeing of a wide variety of products including tapes, sweaters, hosiery and other garments.

Write today for a newly printed bulletin describing this machine in detail.

ROTARY SKEIN DYEING MACHINES

The well known and universally used Rotary Type Machines featuring All Stainless Steel construction is a specialty with us.

These machines are built in a wide range of sizes and two distinct types:

NON-HOIST MACHINES: for Wool, Worsted and Unmercerized Cotton yarn, and, **HOIST MACHINES:** for Silk, Rayon, Mercerized Cotton, and other yarns which are especially receptive to color. The hoist feature enables raising the reel with its load of yarn from the liquor for bath make up, sampling, and color or chemical additions.

The skeins to be dyed are suspended on a series of pairs of wood or metal dyesticks. The outer sticks are carried in suitable cups in the outer periphery of wheels forming the reel and the inner ones in suitable recesses in rings attached to the arms of the wheels about midway between the axle and periphery. Rings carrying the inside sticks are adjustable to provide proper angle of suspension and tension on all varieties of yarn or length of reeling and are also made, when desired, with several series of cups to handle a wider range of skein lengths. Retainers of the yarn carrying sticks provide for quick and easy loading and unloading of the machine.

The reel revolves half submerged in the dye bath and the dyeing is accomplished by gently passing the yarn through the bath. Each pair of sticks is given a quarter turn at each revolution of the reel to provide complete penetration and level dyeing of all portions of the skeins. For level dyeing and improved condition of the yarn after dyeing this principle has not been improved upon. It provides remarkable flexibility as regards variety of yarns and wide variation in yarn loads that may be dyed or processed in a machine of any rated capacity.

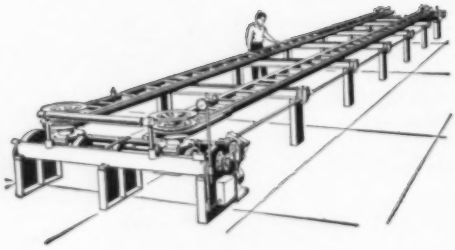
STAINLESS STEEL PADDLE WHEEL MACHINE

is available with or without cover.

REPLACEMENT PARTS FOR ALL KLAUDER WELDON GILES MACHINES

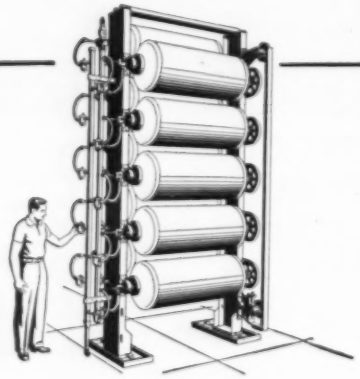
EST. 1820
BUTTERWORTH
Division of
VAN NORMAN INDUSTRIES INC.

BUTTERWORTH
WET FINISHING MACHINERY



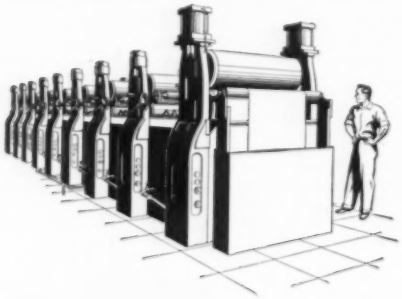
TENTERS AND CHAINS

Complete line of tenters, including Straight Automatic, Vibratory, Mercerizing, Return. For use on wide range of fabrics. Ripple-Flo design for resin finishes, water repellents and permanent finishes. New "Double O" Chain is the most popular in the industry. Chain body is 25% stronger without sacrificing interchangeability. Reduces downtime by giving longer wear.



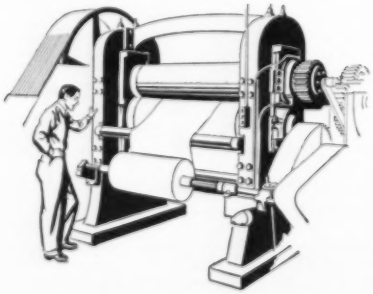
CYLINDER DRYING MACHINES

Engineered installations at a competitive price because of new manufacturing techniques, new fabricating economies. Coded or uncoded cylinders. Choice of copper or stainless steel cylinders . . . vertical or horizontal arrangement . . . fabricated or cast-iron columns . . . gear, sprocket and chain or V-belt drive.



COMPARTMENT WASHERS

Unit-type construction. Can be furnished in any number of compartments, for range operation or independent use. Different weights of cloth can be run without "scrimping in" or damaging the cloth. Individual motor drive for each set of squeeze rolls.



CALENDERS AND PRESSED ROLLS

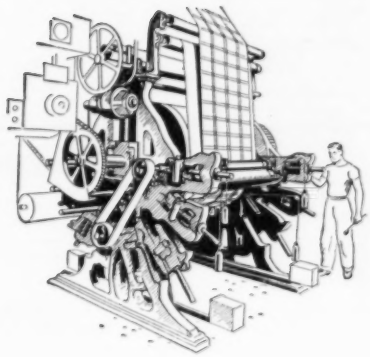
All types and sizes of calenders, from light two-roll machines with lever pressure or micro-set, to nine-roll hydraulic machines. Butterworth furnishes new Dura-Smooth Calender Rolls, or refills your present rolls regardless of make. Butterworth Rolls are available for every make of calender. Made of finest material, and tested for smoothness, hardness and density.

H. W. BUTTERWORTH & SONS CO.

BETHAYRES, PENNSYLVANIA

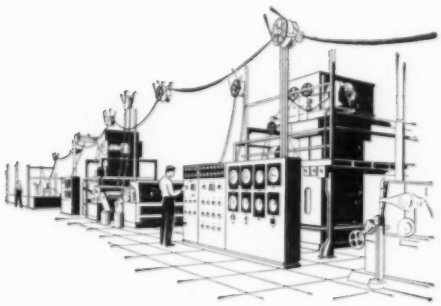
1211 Johnston Bldg., Charlotte, N.C.

The only manufacturers of a complete line of wet finishing equipment, including machines for bleaching, boiling-out, dyeing, mercerizing, finishing, embossing. Also pot spinning machines for synthetic fibers, drying cylinders, tenter chains.



PRINTING MACHINES

Designed and precision-built to permit close control of printing on cotton, silk or synthetic fabrics. Up to 14 color shades in multiple patterns and small figure designs are registered accurately by means of precision-machined nips.



COMPLETE RANGES

Butterworth builds complete ranges for continuous bleaching, continuous dyeing, mercerizing and finishing, including equipment for narrow fabrics, and laboratory ranges. At Butterworth, you get a complete operating job, including motors, instruments and auxiliary equipment. There is one contract, one responsibility for a complete installation.

REPAIRS AND REPLACEMENT PARTS

A $2-million inventory of 50,000 different Butterworth parts is available for immediate shipment. Butterworth service is offered to help your wet finishing department keep equipment at peak efficiency. Perhaps all you need is a spare part — but if you need it in a hurry, you'll get it in a hurry, if humanly possible.

SPECIAL MACHINES, EQUIPMENT AND PROCESS MACHINES

Many leaders in American industry have utilized the engineering skill and manufacturing facilities of Butterworth to carry out special projects requiring unique design, research and production machinery. Developmental work is strictly confidential.

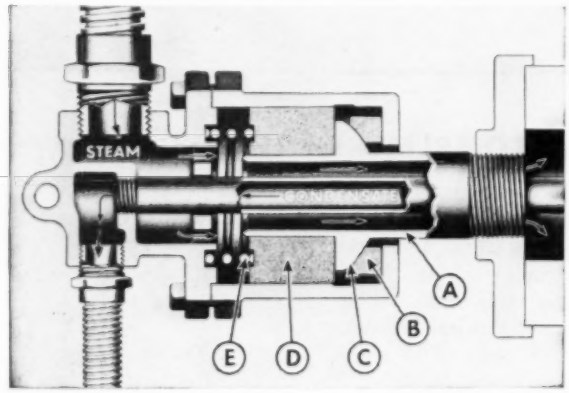
JOHNSON ROTARY PRESSURE JOINTS

For 23" Diameter Dry Cans, Print Cans, Calenders, 5' and 7' Cotton Slasher Cylinders, 30" Diameter Multiple Slasher Cylinders, Singer Rolls, and Compressive Shrinkage Ranges.

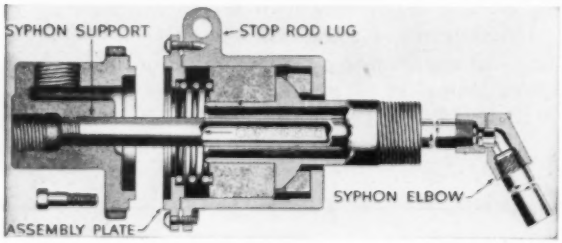
Johnson Joints are used throughout the textile industry to get steam into rotating rolls and to get condensate out again. They are completely packless, need no oiling or adjusting. Hundreds of thousands have been placed in service, and practically all machinery manufacturers have adopted them. Johnson Joints are available in types to meet all operating conditions, sizes from ¼ to 6" and for pressures up to 250 lbs.

Self-Supported – Type S

Type S Series 2000 Johnson Joints are self-supported. They are installed with flexible hose connections to permit them to shift wih the roll. Lugs are provided on body or head for stop rods. Cross section view below shows construction. Described in Bulletin S-2001.

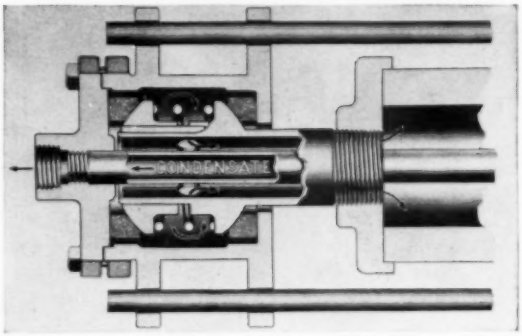


Type SB Johnson Joint. Rotating member consists of just one part, the nipple (A), attached to roll. Nipple has convex collar (B), which rotates against carbon graphite seal ring (C). Carbon graphite guide (D) is fitted carefully between nipple and body to support the joint. Spring (E) is used for initial seating only.

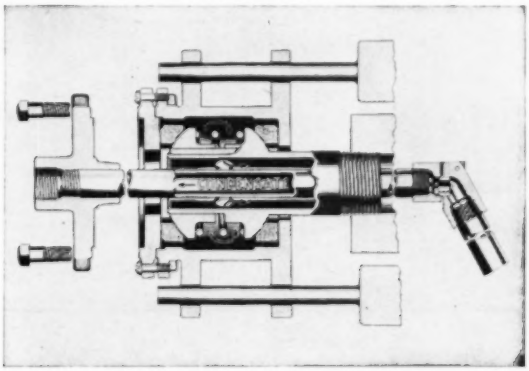


Type SB2P Series 3000 Johnson Joint with special assembly plate and Johnson Syphon Elbow. The assembly plate serves to hold internal parts in position when head is removed. It is a perfect team mate for the syphon elbow, since the syphon pipe can be withdrawn or inserted right through the Type SB2P.

Rod-Supported – Type L

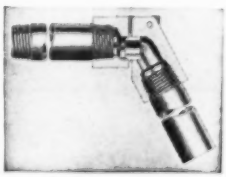


Type L. Johnson Joints have lugs cast on bodies which permit supporting the joints by simple rods. This arrangement lifts the weight of the body and the connecting fittings from the rotating assembly, and assures maximum life of the wearing parts. Cross section view shows construction of the Type L. Described in Bulletin J.



Type L-JSP Johnson Joint, as used with the Johnson Syphon Elbow. Joint has special assembly plate which serves to hold the internal parts in position when the head is removed. The syphon elbow and pipe can be inserted or withdrawn right through the joint.

Johnson Syphon Elbow



Designed for use with Johnson Joints, this mechanical syphon elbow eliminates many of the troubles encountered with unwieldy curved syphon pipes. It permits the use of two straight pipes for the syphon pipe. When inside the rotating roll, the weight of the pipe closes the elbow to a tight seal. The entire syphon pipe and elbow can be inserted or withdrawn right through the joint, in some cases while the machine is in operation. Described in Bulletin SE.

THE JOHNSON CORPORATION

814 Wood St., THREE RIVERS, MICH.

Representatives in Principal Cities—In Canada: A. S. Leitch Co., Ltd., Toronto, Ontario

Fabricated and installed at Lanett Bleachery and Dye Works, Lanett, Alabama by Sims Metal Works.

PROVEN SUPERIOR

In actual day to day operation where the real worth of machinery is tested, Sims new Stainless Steel 75 psi reversed dished head 44 Dry Cans* are proven superior. They require less horsepower . . . are easier on bearings . . . and save floor space with no loss in drying surface. And the chain drive is on one side of the can, while the steam fittings are on the other side . . . permitting maintenance of the drive without time lost waiting for steam pipes to cool.

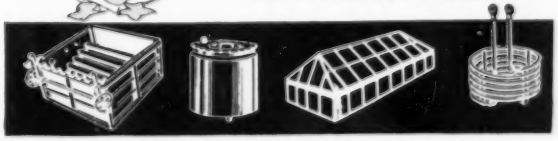
Furnished Teflon-coated if desired.

FOR ECONOMY AND QUALITY. Our modern and progressive metal-working shops, our skilled craftsmen, our know how—these are guarantees of quality. For custom tailoring of stainless steel, call, wire, or write *now*.

ASME CODE STAMPED

*U. S. PAT. OFF. NO. 2779104

Sims
METAL WORKS
WEST POINT, GEORGIA



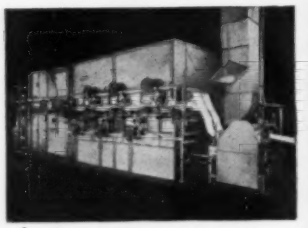
United States Supply Co.,
888 Broadway, East Providence, R. I.

Harley D. Hohm, Inc., 128 Buist Ave.,
Greenville, S. C.

Friday Textile Machine & Supply Co.,
Gastonia, N. C.

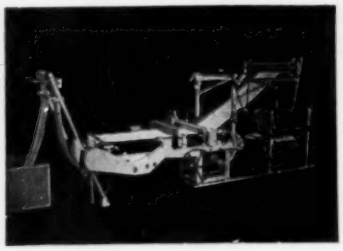
FABRICATORS SINCE 1928

For more data, write this page number on Reader-Service card. →



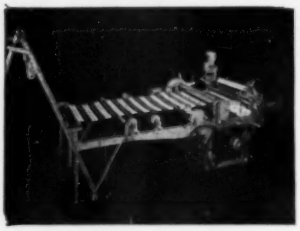
REEL, DRYER RANGE for knit goods

A high speed Range that continuously wet spreads, extracts, chemically processes, dries, conditions and dry flat folds. This range features low labor cost, elimination of cloth end waste, and minimum steam consumption.



TENSIONLESS CALENDER

A steaming machine for quality controlled knit fabrics. Designed to reduce and control relaxation shrinkage of underwear and outerwear. This machine is available in folding or winding models. It can be used for conventional calendering as well as shrinkage control work.

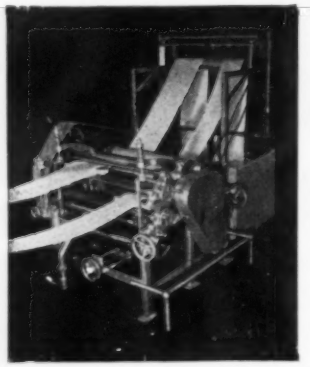


STRAIGHT LINE CALENDER

A high speed finishing machine designed for straightening fabric stripes, patterns, or cross line in a single pass. The machine will spread, cool, roll up and measure any style of circular knit fabrics. It is a highly productive unit, operating at speeds up to 45 yards per minute.

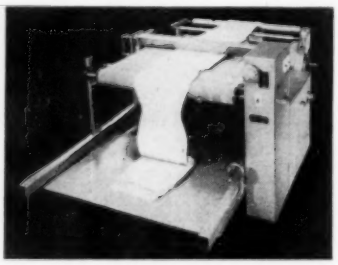
tube-tex®

The Finest Name in Knit Goods Finishing Machinery



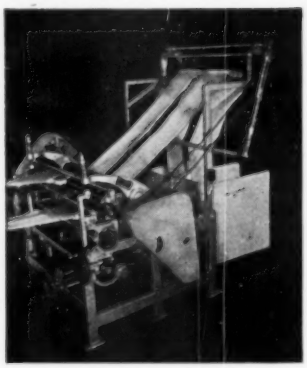
EXTRACTOR PAD

A high speed unit handled by one operator. Designed to process one or two strands of fabric simultaneously. The Extractor Pad will continuously detwist, wet spread, extract, chemically process, and wet flat fold any type of circular knit goods.



SWEATER STEAMER

A unique machine that eliminates hand framing of individual sweater body segments. By means of a driven spreading mechanism, fabric is conveyed fully relaxed and free of tension through controlled steam. The operation of the machine permits the shaping of sweater bodies without distortion of the tail or waistband while at the same time perfectly uniform length and width dimensions are produced. The machine does not employ any pressing or calendering rolls. As a result, a lofty soft fabric is obtained. The machine delivers fabric in folded form but can also be equipped to roll material.



EXTRACTOR

A machine that out-performs any other means known for extracting knit goods. It is the only method wherein fabric passes from the soaking wet rope condition to the flat folded extracted state in a single operation. It produces cloth with a clean surface appearance and uniformity. Can easily be converted to the Extractor Pad, if desired.

TUBE-TEX is fully covered by patents issued and pending. All patents controlled by:

tubular textile machinery corporation

33-61 54th STREET, WOODSIDE, LONG ISLAND, NEW YORK—HIckory 6-2000

Licensed agents and manufacturers: H. W. Butterworth & Sons Co., Bethayres, Pennsylvania.

The NATIONAL DRYING MACHINERY CO.

HANCOCK ST. AND LEHIGH AVE., PHILADELPHIA 33, PA.

NEW ENGLAND AGENT: Jones & Hunt, Inc.
Emerson Ave., Gloucester, Mass.

CABLE ADDRESS: "NADRYMA"
Western Union Code

"NATIONAL" MODEL G PIECE GOODS DRYER

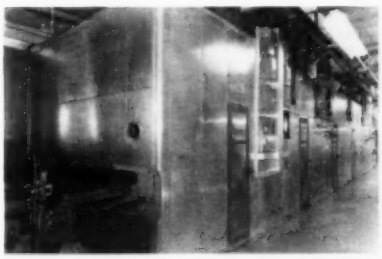
Designed to provide unequalled efficiency, speed and economy in piece goods drying and curing, and built for long, satisfactory service. Features include:

"INSUL-POLE" CONVEYOR. Patented rotating-expanding conveyor poles made of a special heat-resisting composition to provide greatly increased service life for the conveyor at higher temperatures. A new, simplified, yet more accurate loop-forming mechanism is now available.

NEW "P-4" CONSTRUCTION. This provides a precision-built, pre-fabricated, truss-type structure of greater strength, rigidity and durability. Dryer can be installed in half the time formerly required.

DUPLEX CONVEYORS . . . The new MODEL G Dryers can be furnished with two independently operated and controlled conveyors in the same drying system. This permits two runs, of light and heavy goods, at two different speeds.

GAS HEATING. Many new installations are equipped with the "National" Gas Heating System — the ultimate in safety and efficiency, and providing higher temperatures and greater drying speeds. Otherwise, heat source may be steam, electric or other medium.



"NATIONAL" SR-4 TENTER DRYER

Assures lower drying costs by providing greater drying capacity per lineal foot of frame, on all qualities. Designed especially for the high-speed frames now available. Features include:

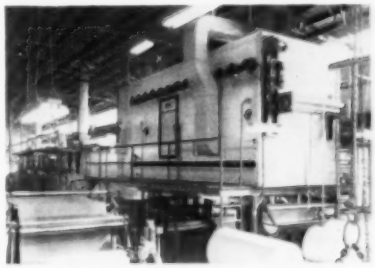
Individual air velocity and temperature control available for each 10′ section of frame.

Adjustable pitch fans and in-or out-of-line air blast nozzles, for maximum flexibility in application of the drying medium to all qualities and treatments.

Continuous filter screen that removes all lint from the circulating air and maintains maximum productive capacity at all times.

"NATIONAL" PRINT GOODS DRYER

Design, construction and control stress the importance of predrying through the use of high velocity nozzle impingement section and of avoiding "scrimps" in the printed material as it comes from the press.



"NATIONAL" ROLL DRYER

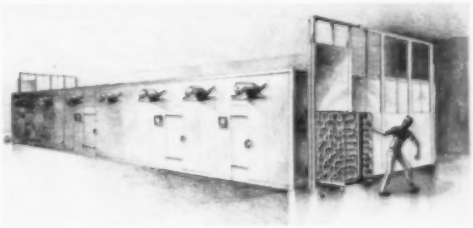
Designed to greatly increase capacity of existing drying equipment, with minimum additional floor space. Acts as pre-dryer, to take off substantial amount of initial moisture. Provides tensionless drying of open material. Gas or steam heated, in any required size or capacity. Can also be arranged to serve as highly efficient Roll Curer.

"NATIONAL" AUTOMATIC SKEIN DRYER

In this modern, three-zone machine, the time required for the drying—cooling—conditioning of yarn in the skein is greatly reduced, with resultant savings in labor and steam costs, and with increased uniformity in the processed product.

"NATIONAL" NYLON HEAT SETTING UNIT

Designed for continuous feed; a wide range of variable speeds; and operating temperatures up to or exceeding 500°F. Features include continuous automatic air cooling system; controlled reproducible tension; improved burner operation and control.



"NATIONAL" RAYON CAKE DRYER

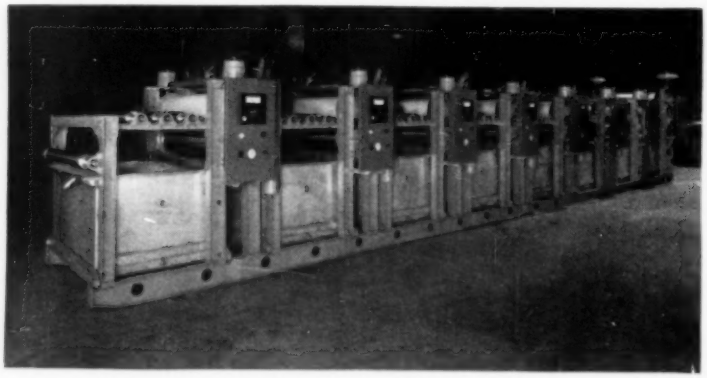
Batch or continuous tunnel type design, with standard unit construction permitting future expansion. Features involving improved air diffusion and control assure higher drying speeds, closer uniformity and consistently better drying quality.

"NATIONAL" builds drying and conditioning equipment of every type required by the Textile Industry. Consult our Engineering Department concerning new installations or the adaption of "NATIONAL" features to existing machines.

The Textile Shops

SPARTANBURG, S. C.

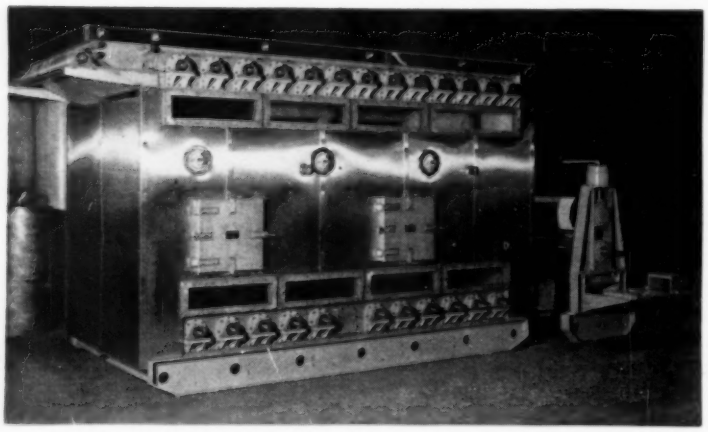
COMPLETE RANGES. The Textile Shops builds complete ranges for dyeing, finishing, etc. Custom built to users' special requirements . . . of heavy, rugged construction for long, trouble-free life.



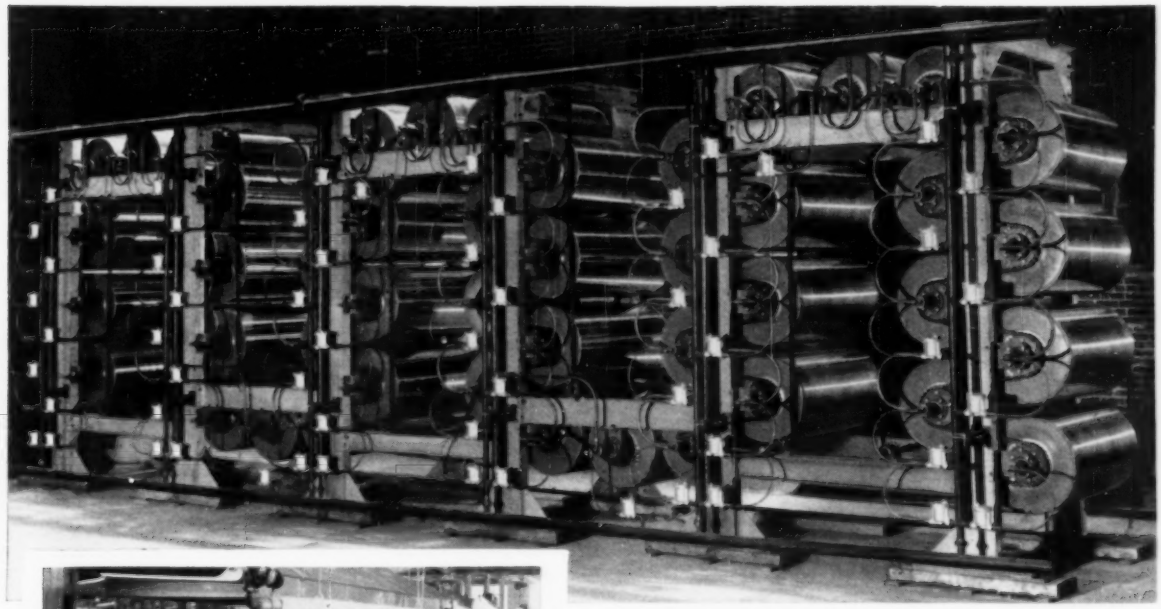
OPEN WIDTH WASHERS, SOAPERS AND BOIL-OFF MACHINES. Unit or integral type construction of heavy stainless steel. Can be furnished with any number of compartments for independent or range operation. Boxes are constructed with rounded corners and no corner welds to provide for ease of cleaning and long, trouble-free service.

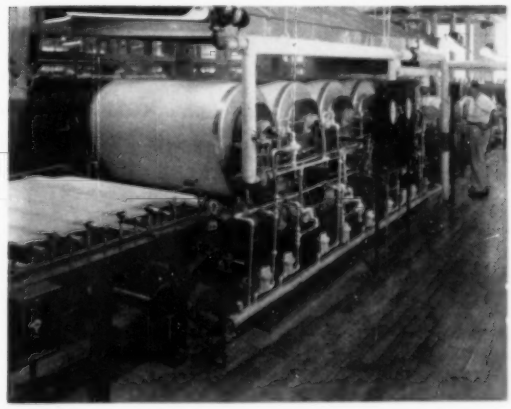
ADDITIONAL PRODUCTS:

- Progressive (Jig) Boil-Off Machines.
- Two and Three Roll Manual and Automatic Batchers.
- Scrays.
- Convection (Hot Air) Dryers
- Stainless Steel Hoods and Exhaust Systems.
- Stainless Steel Dye Kettles.
- Vacuum Cleaning Systems for Spoolers, Warpers and Nappers.
- Padders and Mangles.
- Special Machines.
- Stationary and Magazine Creels.



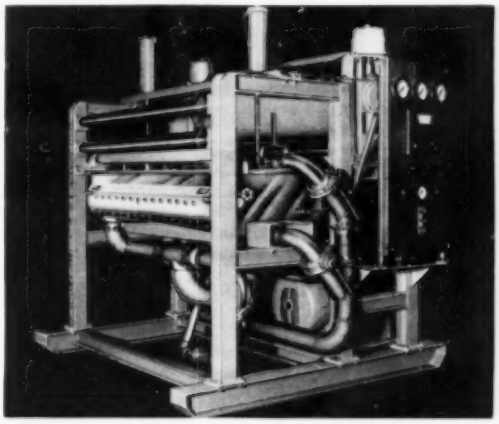
STEAMERS AND AGERS. Type 316 stainless steel throughout, except for heavy structural steel shipping and mounting skids. With large access doors, top and bottom windows both sides, and ample interior lighting for clear observation of all rolls while machine is in operation. Double wiper-type seals integrally mounted with bearings to assure positive alignment for perfect, long-life sealing of roll shafts. With or without water seal box and squeeze rolls, as preferred. Particularly adapted for Acid Print Aging.





HIGH SPEED SLASHERS. Thirty inch diameter, stainless steel, multi-cylinder, all purpose slashers. Heavy rigid structural steel or cast iron frames. Old style slashers may be economically modernized by installing multi-cylinder drying section and Griffin Size Applicator. Nine cylinder drying section fits in, space occupied by old style two or three cylinder driers and produces drying rates to 1200 lbs. per hour or higher.

CYLINDER DRYING MACHINES. Custom designed machines to suit users' particular requirements, floor space, ceiling height, etc. Highly polished stainless steel cylinders employing dished or flat steel heads built to ASME Code requirements, with or without Code Label as required. Machines are built with heavy structural steel supporting framework. Vee-Belt, Chain or Gear Drive. Face lengths to 144 inches, diameters 23 and 30 inches. Conversion kits for change-over to Vee-Belt Drive are available. Also Back Dryers for Print Machines.



BOND DYEING, WASHING AND BOIL-OFF MACHINE. The revolutionary, newly-designed Bond Machine provides better, faster, more flexible continuous dyeing with great savings in materials and floor space; it permits the continuous dyeing of various fabrics now handled only by batch methods such as jig or kettle dyeing. The Bond Machine employs a unique liquid jet action; it applies dyestuffs under pressure and in three dimensions simultaneously—vertically, horizontally and linearly. Virtually all dyestuffs, including soluble vat, direct, acid, sulphur, acetate and napthol are readily applied with The Bond Machine. This machine is particularly suited for handling such hard to wash and dye fabrics as poplins, upholstery, tufted, corduroy, terry, knitted, etc. The machine requires small quantities of dyes and small floor space; thus, short runs can be handled economically and color change-overs quickly accomplished. It is ideal for washing heavy or pile fabrics.

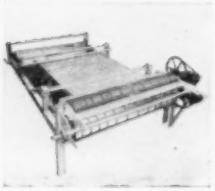
KETTLES—TANKS—VATS. Standard stainless steel Mixing and Storage Kettles for Warp Size, Back-Fill, Dye Paste, etc. Kettles employ open and/or closed steam coils or steam jackets, as preferred. The Textile Shops specializes in the building of special stainless steel Tanks and Vats.

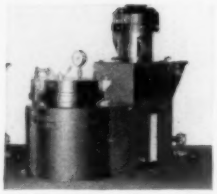
The Textile Shops

SPARTANBURG, S. C.

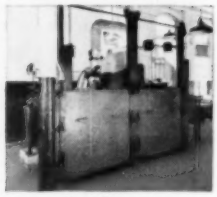
RIGGS and "From Loom Everything in Finishing Equipment for

Carbonizing Range


Cloth Storage Scray


SPT Laboratory Dye Kettle

90 yd. Sectional Acid Ager (Stainless)


Yarn Steamer

RIGGS and LOMBARD, Inc., Lowell, Mass.

Carbonizing Ranges—Cloth
Compacting Machines
Crushers—Continuous
Crushers—Semi-continuous
Dry Cleaners—Derby—Continuous
Dye Becks
Dye Kettles—Piece
Dye Kettles—Rug
Dye Kettles—Sample
Dye Kettles—Stock—Hy-Temperature
Dye Kettles—Stock—Standard Temperature
Extractors
Fulling Mills—Cloth
Fulling Mills—Endless Felt
Jigs—Progressive
Laboratory Machines
Padders
Pails
Poteyes
Pusher Mills
Reels
Rolls—Fulling Mills—Rubber Ring Type
Rolls—Fulling Mills—Vulcanized Rubber
Rolls—Miscellaneous
Rolls—Vulcanized Rubber
Rolls—Wood Lagged
Shrinkproofing Machines
Soap Distributing Systems
Soapers—Rope
Soaping Machines—Open Width
Soaping Machines—Rope
Special Machines
Squeeze Roll Extractors
Tanks—Size Mixing
Tanks—Storage
Top Dyeing Machines
Trucks—Cloth
Trucks—Dye
Trucks—Pin
Washers—Caustic
Washers—Continuous
Washers—Dolly
Washers—Endless Felt
Washers—Open Width
Wringers
Yarn Steamers

Cook MACHINE CO. INC., Lowell, Mass.

A Subsidiary of Riggs and Lombard, Inc.

Agers & Steamers
Bleach House Washers
Bleaching J Boxes
Compensators
Continuous Cloth Feeds
Cylinder Dryers
Desizing Ranges
Detackers
Detwisters
Dye Ranges
Finishing Ranges
Folders
Padders
Plisse Printing Ranges
Roll Extractors
Rope Bleach Ranges
Saturators, Open Width
Scutchers
Selvedge Uncurlers
Singers
Slack Washers
Tow Plaiters
Washers, Open Width
Winders
Boil-Off

Unique Advantages Typify Each Machine In Our Complete Range

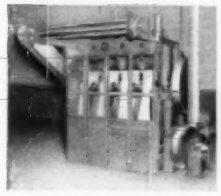
Photographs or catalog sheets briefly describing all machines listed herewith are available on request.

RIGGS and LOMBARD, Inc.,

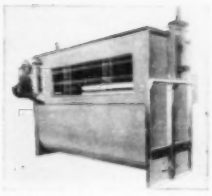
LOMBARD

to Inspection"

Woolens, Worsteds, Cottons, Synthetics

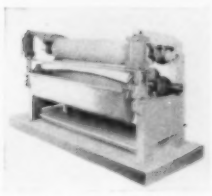


Semi-Continuous Crusher

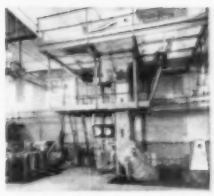


Wash-O-Matic Bleacher

Stainless Steel Washer for Endless Felt Goods



Light Duty 2 Roll Padder



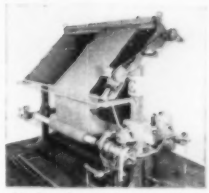
J Box (Dupont type)

PARKS & WOOLSON MACHINE COMPANY, Springfield, Vt.

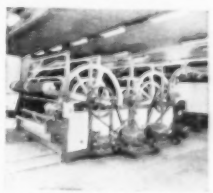
Division of Riggs and Lombard, Inc.

CLOTH:
Atomizers
Boiling Brushing
Batchers
Blades (Shear)
Blade Beaters
Boarding
Boil-Off
Button Breakers
Buffing
Burling Ranges
Carbon Duster Dry Milling
Conditioning
Conveyors
Cooling
Counters (Measuring)
Crabbing
Dewing
Decating (Vacuum)
Delustering
Despecking
Doubling
Dusting
Edge Trimming
Embossed Shearing
Examining
Expanders
Folders
Gigging
Grading and Inspecting
Gray Goods Shearing
Guiders
Ink Trademark
Inspecting and Trimming
Label Stamping
Laundry Napping
Loop Cutters and Shearing
Lustering
Mantle Steaming & Air Cooling
Marking
Measuring
Mending Tables
Metal Finders
Moth Proofing
Napping
Packaging
Perches
Piece End Sewing
Pile Fabric
Plaiters and Plaiting
Plush
Polishing
Power Perching
Presses (Apron Type)
Pumicing
Printing Selvedge
Rerolling
Rewinders
Rolling
Sanding
Scrays and Cradles
Semi-Decaters
Shearing
Shrinking
Silk Finishing
Slitting and Roll Winding
Sponging
Spot Proofing
Stamping
Steaming
Sueding
Synthetic
Tacking
Teasel Gigs
Tenter Raising
Thread Cutting
Tigering
Towel Trimming
Trade Mark
Transfer
Trimming
Tubing
Tubing and Doubling
Tubular Finishing
Unrolling
Velour Raising
Velvet
Waxing
Winding

ALSO:
Carpet Finishing
Felt Finishing
Fur Finishing
Grinders
Shear Blades
Nappers
Cloth
Knit Goods Finishing
Trico
Hosiery Napping
Sueding
Leather
Rubber



Veritex Inspecting Machine



Ten Contact Teasel Gig & Wet Brushing Machine

Universal Tubing Machine

Vertical Trimming or Greige Goods Shear

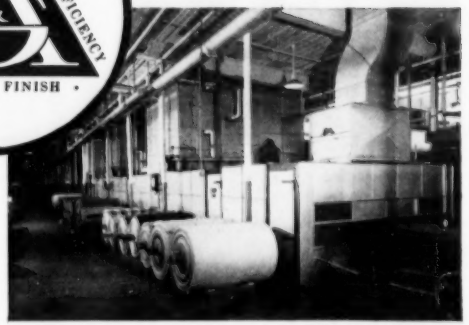
P. O. Box 191, Lowell, Massachusetts

Three great makers of finishing equipment combine their experience and facilities to help you improve and increase your production for profit. Write now to consult our unequalled composite engineering service.

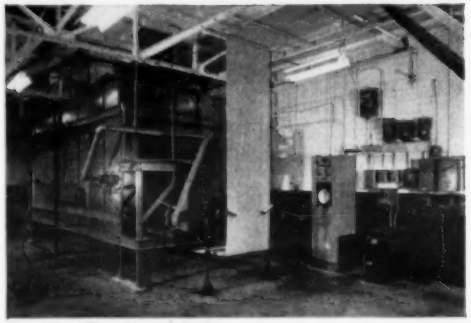
For more data, write this page number on Reader-Service card. →

Carpet Dryer

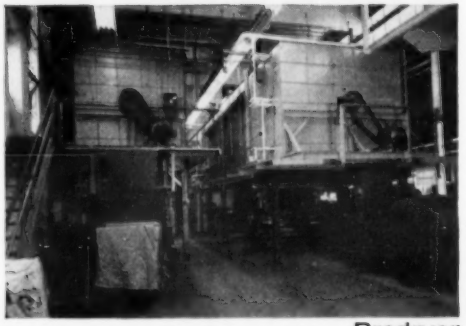
Dye Range Dryer



Tenter Dryer



Resin Curing Unit



Predryer

DRYERS... CURING UNITS

CUSTOM ENGINEERED by the company—Andrews and Goodrich—that has concentrated on the design and manufacture of this important equipment for many years.

The basic reasons why A&G units are so uniformly successful (1) is the care with which the drying or curing problem is studied and (2) the skill with which the unit is designed to provide the highest production rate with quality finishing. A&G Units are truly 'custom engineered'.

This concept of service applies to the entire A&G Line which includes:

Tenter Dryers	Warp Dryers
Predryers	Stock Dryers
Dye Range Dryers	Resin Curing Units
Skein Dryers	Cloth Conditioners
Loop Dryers	Carpet Dryers

Note the Ross Group of Complementing Services, all affiliated and in position to contribute engineering skill to any project in the field of "Engineered Atmospheres" or related operations.

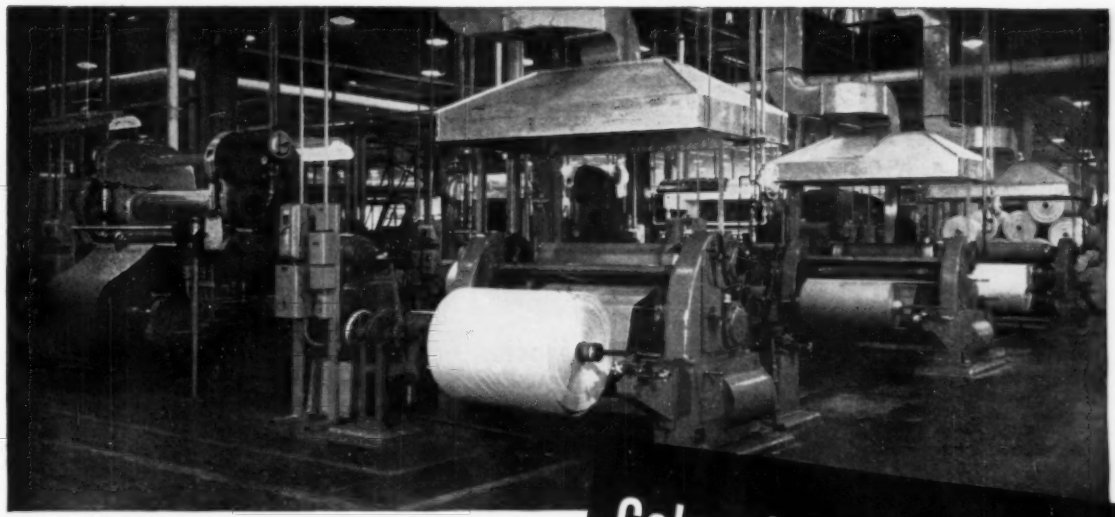
THE MIDLAND-ROSS GROUP OF COMPLEMENTING SERVICES

J. O. Ross Engineering, New York
John Waldron Corporation, New Brunswick, N. J.
Andrews and Goodrich, Boston
Ross Engineering of Canada Limited, Montreal
Ross Midwest Fulton, Dayton
Hartig Extruders, Mountainside, N. J.
Carrier-Ross Engineering Company, Ltd., England

ANDREWS and GOODRICH

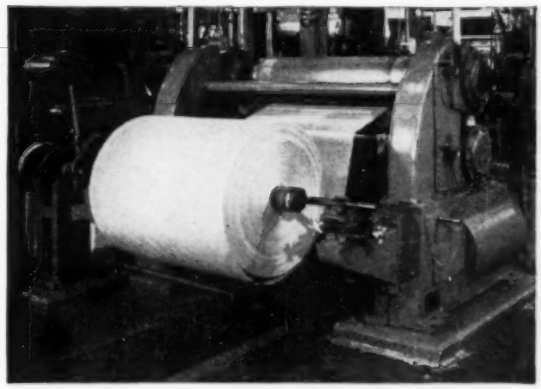
A unit of J. O. Ross Engineering Division,
Midland-Ross Corporation
336 ADAMS STREET, BOSTON (Dorchester), MASS.

Southern Representatives:
McSpadden & Scantland, Charlotte, N. C.
Atlanta Office:
3120 Maple, N.E., Atlanta 5, Ga., H. H. McCall

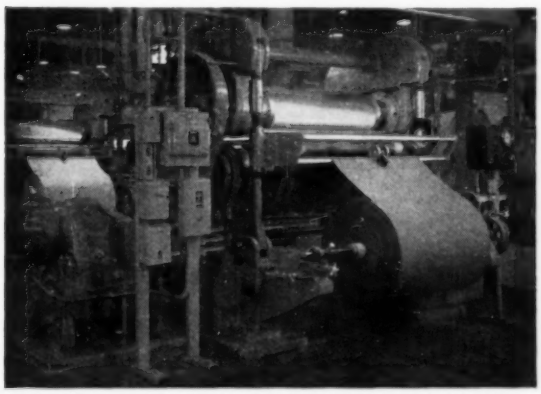


View of finishing operation at The Springs Cotton Mills, Grace Bleachery Division showing Appleton Machine Company 20 Ton Embossers and 50 Ton Schreiner Calenders.

Colonel Elliott Springs Chooses Appleton



One of three Appleton 20 Ton Embossers in use at The Springs Cotton Mills, Grace Bleachery Division.



One of three Appleton 50 Ton Schreiner Calenders specially adapted for everglaze finishes at Springs Cotton Mills, Grace Bleachery Division.

The uncommon elegance of Springmaid sheets can be attributed to Colonel Elliott Springs' shrewd judgment of textile machinery.

According to a trade journal article, the famous Springs Cotton Mills owner demands equipment that meets these requirements:

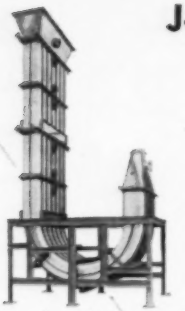
1—It must be modern.
2—It must be well made.
3—It must be the best available.

There never was a better time to invest in efficient equipment. If you would like to own the finest embossers or calenders in the industry, write or call an Appleton representative today. He will gladly analyze your needs, *without obligation.*

APPLETON MACHINE COMPANY
APPLETON WISCONSIN

CUSTOM-BUILDERS OF TEXTILE CALENDERS • CALENDER ROLLS OF ALL KINDS

J-BOXES



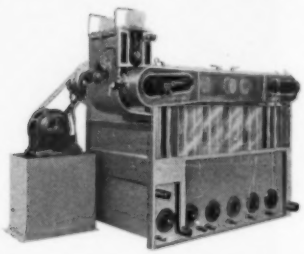
BECCO PROCESS

J-Box with steam manifolds in straight section of box. Open type plaiter.

DU PONT PROCESS

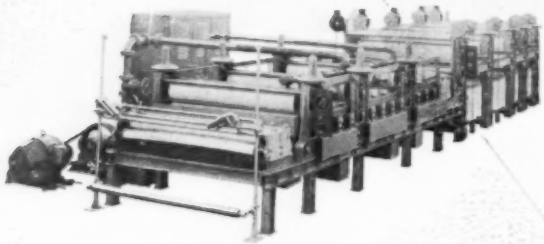
J-Box with new type heating chamber. Enclosed plaiter.

MULTI-STAGE WASHERS



Stainless steel, 3-4-5 and 6 stage rope washers. 50″ and 60″ widths. True counter flow of wash water. Adjustable tension. Fully enclosed.

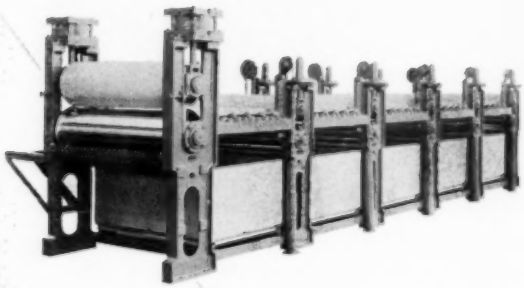
CHAINLESS MERCERIZERS



A versatile mercerizing range with open width washer for cottons as well as fabrics with warps and fillings of different fibers.

OPEN WIDTH WASHERS

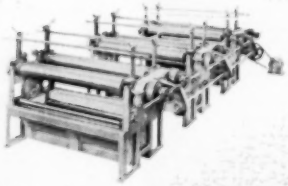
Unit construction. 5 and 10 ton squeezers. No pressure levers to obstruct operators. Adjustable heights for skying rolls. Tanks readily removed. Rack and pinion compensators. Machined cast iron frames. Accurate tracking of fabric.



SATURATORS

Stainless steel tank. Pneumatically loaded squeeze rolls. Rope and open types.

JIGS



Built for light or heavy weight fabrics. Fine adjustment of cloth tension. Smooth winding and tracking of 30″ diameter rolls from beam to beam.

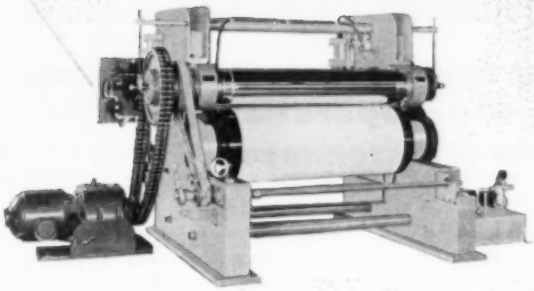
PADS

2 and 3 roll types. Pressures and face widths to customers' requirements.

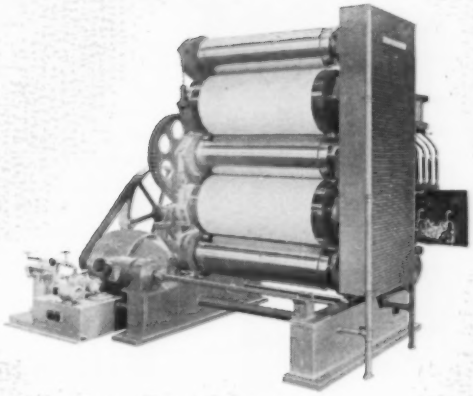
McKIERNAN-TERRY CORP.

SOUTHERN REPRESENTATIVE —

MULTIPLE-ROLL CALENDERS



2 Roll Open Frame Calenders — Quick conversions from Friction — Schreiner — Embossing — Rolling. Tapered bore roller bearings, hydraulically removed.



3-4-5 Roll Open Frame Calenders — Capacities as required. Built for Rolling, Chasing. Provisions for conversions from Friction and Schreiner services. Tapered bore roller bearings, hydraulically removed.

FILLED ROLLS

Friction, Schreiner, Rolling, Chasing, Embossing — Made from selected pre-conditioned stock in all combinations of filler, under constant pressure and rigid controls. Shafts electronically inspected.

OTHER McKIERNAN-TERRY PRODUCTS

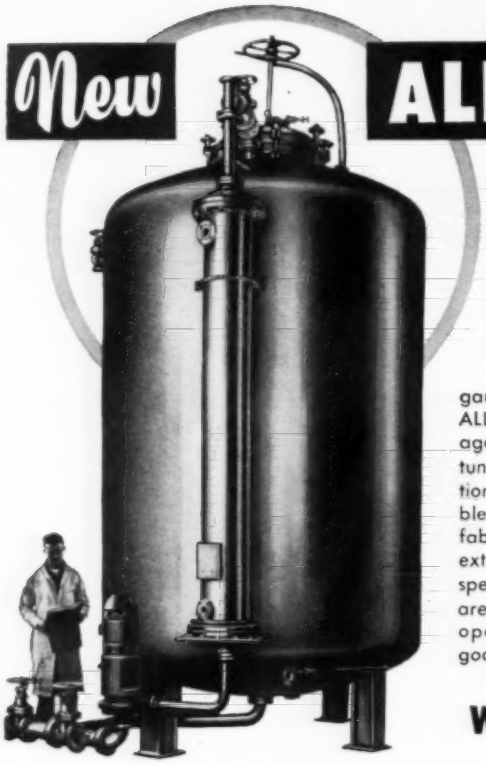
Continuous dyeing and bleaching ranges. Steamers and agers. Open width and rope saturators, squeezers. Water cooled and steam heated rolls. All types of stainless steel rolls. Drag reels, plaiters and auxiliary equipment. Gas burning equipment for calenders. Special machinery to customers' requirements.

TEXTILE MACHINERY DIVISION, DOVER, N. J.
ROLL DIVISION, HARRISON, N. J.

McK T

Industrial Equipment Company, 812 Johnston Building, Charlotte, N. C.

New ALLEN Unit Package KIERS



Unsurpassed for Easy Installation, Trouble-Free Operation and Low-Cost Maintenance

For boiling or bleaching all types of cotton goods from gauze to heavy twills, these new ALLEN stainless steel "Unit-Package" kiers offer unusual opportunities for more profitable operation to small and medium sized bleacheries and those doing fine fabrics. Large plants, too, find them extremely useful for short runs and special fabrics. In many cases, they are replacing continuous bleaching operations for certain types of goods.

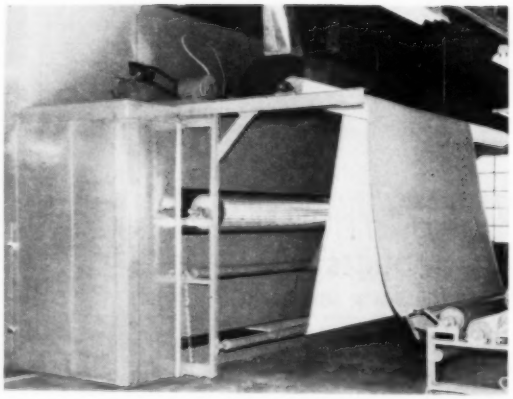
A few of the special features which make these new kiers extremely desirable include:

- **A completely prefabricated unit — pump and heater are integral parts of the kier — for easier installation and maintenance.**
- **Smooth, stainless steel interiors eliminate rub, rust and stain marks.**

Write today for circulars giving complete information on this as well as Allen kiers for knit goods and kiers for cotton and cotton batting.

William Allen Son's Company
SHREWSBURY, MASSACHUSETTS
Division of
O. G. KELLEY & COMPANY, Boston 22, Massachusetts

Dalton DRYING SYSTEM



Gas-Fired Latex Curing Oven

This unusually versatile installation at G.&C. Rubber Coating Company, Dalton, Georgia, is a 32′, three-pass, gas fired, warm air curing oven. Carpeting is run on the conveyor belt on the first pass, and on rolls on the second and third passes. This Dalton three-pass oven gives more curing time in the oven . . . resulting in *higher production* and *more thorough* curing of the latex compound. This unit is heated by natural gas.

All Dalton systems are engineered to your individual needs, heavy duty construction throughout. A survey by our trained engineering staff with recommendations for improving your efficiency will be made at no obligation.

The Complete Line of DALTON Equipment

- **INDUSTRIAL DRYERS—** Steam, Infra-Red, Gas
- Rolla-cota & automatic spray latex applicators
- Folding & Roll-up machines
- Conveyors
- Beaters
- Industrial exhaust & blower systems
- Scrim applicators
- Pebble foam applicators
- Foam rubber applicators
- Sheet Metal Fabricators
- Heating & air conditioning
- Steam wet-out boxes
- "J" Boxes

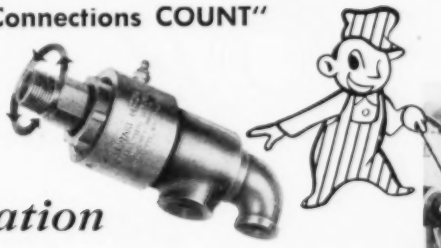
Equipment engineered & designed to fit your specific needs.

Manufacturers of equipment for the textile industry since 1936

DALTON SHEET METAL COMPANY, INC.
C. F. HAWKINS, Sr. Phone 992
439 South McCamy Street, Dalton, Georgia

"WHERE Good Connections COUNT"

A Perfect Combination

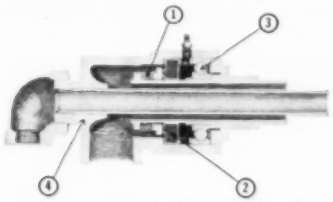


for accurate and economical control of steam on Slashers • Dry Cans • Embossers • Calenders • Printing and Finishing Equipment

You will be pleased by the long, leakproof, and trouble free service you get from this combination. It will save you money on steam and on maintenance and will reduce your parts and replacement inventories considerably.

THE ROTARY UNION*

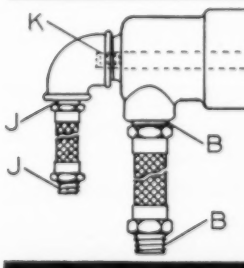
The ball bearing precision mechanical seal uses no springs or packings. The Rotary Union is self-adjusting to fluctuations in pressure, and automatically compensates for wear within the unit or for misalignment of machine adaptors. Perflex® Metal Hose Connections provide floating action, compensating for misalignment, shock, and strain. The Rotary Union requires no adjustments or mechanical maintenance of any kind and will outlast and outperform any other rotating steam joint.



Some Special Features

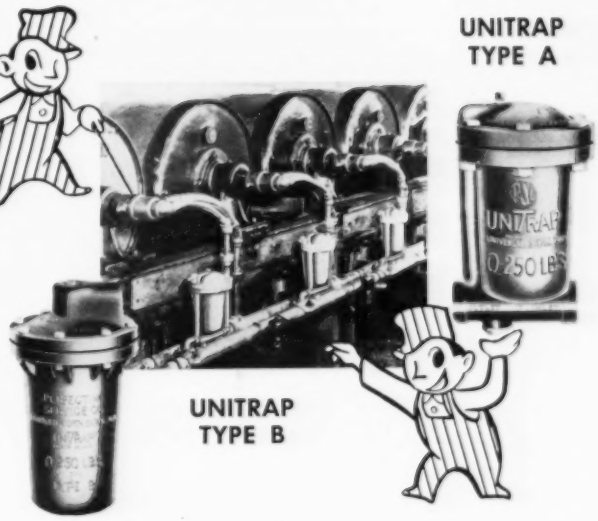
1. Heavy Monel Bellows automatically adjust to pressure. Keeps sealing surfaces parallel and leakproof at all times.
2. Seal Ring . . . optically flat surface assures perfect seal.
3. Ball Bearing Construction. Precision, heavy-duty, radial thrust type. Minimizes friction and power consumption.
4. Unique Syphon Support prevents loosening, breaking, or falling off of syphon pipe.

A	B	J	K	Recommended Hose Size & Min. Length J	Recommended Hose Size & Min. Length B
½	½	½	⅛	½ × 10	½ × 10
¾	¾	½	¼	½ × 10	¾ × 12
1	1	½	⅜	½ × 10	1 × 14
1¼	1¼	½	½	½ × 10	1¼ × 16
1½	1½	¾	¾	¾ × 12	1½ × 18
2	2	1	¾	1 × 14	2 × 21



Perfecting Service Company also makes: Universal Air Regulators, Filters, Lubricators • Perflex® All Metal Flexible Hose • Pushomatic® Quick Couplings • and a wide line of textile machinery specialties.

UNITRAP TYPE A



UNITRAP TYPE B

The UNITRAP* Universal Steam Trap

This is a new type bucket trap which automatically adjusts to all pressure variations from 0 to 250 lbs. without adjusting or changing of orifices, valves, or weights of buckets. Pipe sizes (½" through 2") is all you need specify when ordering. The UNITRAP assures tremendously increased capacity, less steam loss, less maintenance, and faster warm-up. Greatly simplifies traps and parts inventory.

TYPE A UNITRAP

Trap is designed for either straight in-line or angle installation. This model can be supplied with either a plug or blow-off valve at bottom. State which when ordering. Can be repaired without removing from steam line.

Trap No.	Pipe Size Connection	Operating Pressure Range P.S.I.	Capacity Lbs./Hr. Condensate
70-T	½	0–125	0– 1,000
170-T	½	0–125	0– 1,800
270-T	½	0–250	0– 3,500
370-T	¾	0–250	0– 4,500
470-T	1	0–250	0–10,000

TYPE B UNITRAP

Trap may be installed in vertical piping for in-line operation. It may also be installed in an angle or off-set position by removing plug in the angle connection and plugging the top outlet. All moving parts in both models are stainless steel.

*Trade Name & Product Patented

Trap No.	Pipe Size Connection	Operating Pressure Range P.S.I.	Capacity Lbs./Hr. Condensate
100-T	½	0–250	0– 3,000
200-T	½	0–250	0– 5,000
350-T	¾	0–250	0– 6,500
300-T	¾	0–250	0–10,000
450-T	1	0–250	0–13,000
400-T	1	0–250	0–20,000
500-T	1¼	0–250	0–30,000
600-T	1½–2	0–250	0–55,000

PERFECTING SERVICE CO.

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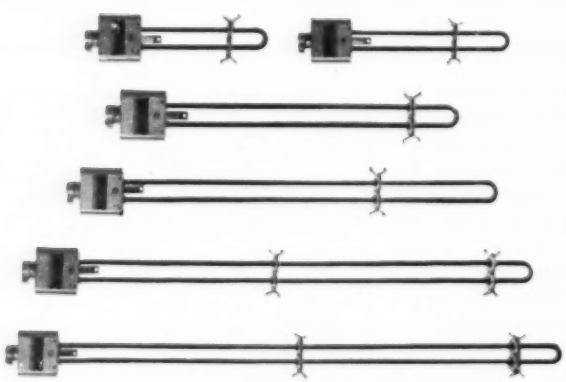
For resin finishing and booster heating

SEE the difference . . .
SAVE the difference with
CHROMALOX
Adjustable Far-Infrared Heaters

This Chromalox URAD heater lets you match your heat source to your work area. In one basic housing you can install up to 27 different heated lengths; each can be varied with the area of the work.



You can do-it-yourself too. Chromalox Far-Infrared elements are designed with a sliding fit that lets you interchange elements anywhere along the housing length. No more wasted heat when you go from one work size to another.

This versatility means real dollars and cents saving along with the built-in advantages of Chromalox Far-Infrared: metal-sheath, unbreakable element; infinitely variable output; high intensity, color-blind and uniform radiation.

Your Chromalox representative can give you detailed suggestions for the application of Chromalox adjustable Far-Infrared Heaters. Or, write us for a copy of Bulletin CS-607. 2623

CHROMALOX
Electric Heat
INDUSTRIAL • COMMERCIAL • RESIDENTIAL
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7701 Thomas Boulevard • Pittsburgh 8, Pa.

Ragan Rings

• SAVE MONEY • SAVE TIME • SAVE WORRY

No. 2 Flange, reversible, spinning ring. Exclusive manufacturers of angle web.

No. 1 Flange Standard height straight web. All sizes up to 3½", reversible.

No. 2 Flange 7/16" high Reversible spinning or Twister Ring.

3⅝ x ⅜" Vertical Ring. Special grease groove. For Nylon and Metal Travelers.

5½ x 43/64 Vertical, Double grease groove, spring ring type; also 1" deep.

No. 2 Flange common ring with clearer pin. Sizes up to 6" diameter.

No. 2 Flange common ring; thin base.

Ragan Twister Ring carrying special traveler; oil reservoir lubrication; in holder.

?

You name it . . . we'll make it! 6" or under

SELF—LUBRICATING RINGS
with visible oil supply
Simplify lubrication, cut oiling man-hours.
Write for details
Rings, 6" and under, Built to Your Specifications

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The only manufacturer of Textile Rings in the South

Five fast ways *to mix fluids uniformly*

You're sure of a uniform batch every time when you mix fluids with a LIGHTNIN Mixer accurately selected for the job.

Every LIGHTNIN is guaranteed, unconditionally, to give you the results you want. Thousands are in use.

See how these five typical LIGHTNINS fit your mixing needs, from dye house to finishing department.

PORTABLES let you convert any open tank into a low-cost mixing vessel. Direct-drive unit (left) dissolves dyestuffs and mixes thin liquids at high speed. Gear-drive model (right) mixes heavier fluids and large batches of thin liquids; stirs starch evenly and thoroughly while cooking. Thirty portable models, from ⅛ to 3 HP.

PERMANENT-MOUNTING propeller types fit any open or loose-covered tank (left) or closed pressure vessel (right). Fully assembled and factory aligned, ready to install. Direct drive; gear drive. Sizes ¼ to 3 HP. Propeller-type LIGHTNINs turn the batch rapidly over and over while rotating it, for thorough, uniform mixing in minimum time.

FOR VERY LARGE MIXING JOBS, specify a powerful Series "E" LIGHTNIN. Gives just-right balance of fluid flow and turbulence for the process. Results fully guaranteed. Hundreds of standard power-speed combinations; turbine, paddle and propeller types for open or closed tanks, top or bottom entering. Sizes 1 to 500 HP.

For quick, competent help on fluid mixing, call your LIGHTNIN Mixer representative. You'll find him listed in classified telephone directories serving these cities:

Akron, Ohio
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Charlotte, N. C.
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Cincinatti, Ohio
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Cleveland, Ohio
Dallas, Texas
Denver, Colo.
Detroit, Mich.
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Kansas City, Mo.
Lafayette, La.
Los Angeles, Calif.
Memphis, Tenn.
Minneapolis, Minn.
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For helpful facts on mixing, plus full description of LIGHTNIN Mixers, send for these LIGHTNIN Catalogs:

- ☐ B-102 Turbine and paddle types, 1 to 500 HP.
- ☐ B-103 Top entering, propeller types, ¼ to 3 HP.
- ☐ B-104 Side entering types, 1 to 25 HP.
- ☐ B-107 Data sheet for figuring mixer requirements.
- ☐ B-108 Portable types, ⅛ to 3 HP.
- ☐ B-109 Condensed catalog (complete line)
- ☐ B-112 Laboratory mixers

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MIXCO fluid mixing specialists

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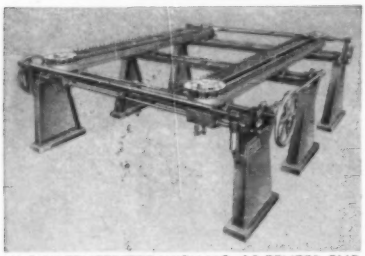
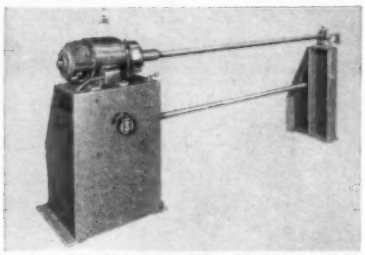
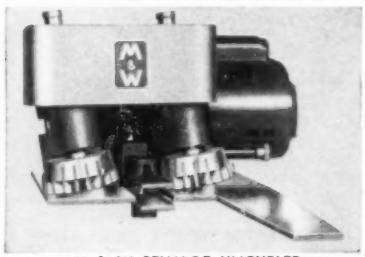
M & W HIGH SPEED TENTER FRAME



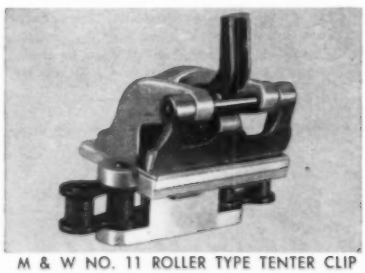
M & W TENTERETTE WITH NO. 12 TENTER CLIP



M & W CONSTANT TENSION CENTER WINDER



M & W SELVAGE UNCURLER



M & W NO. 11 ROLLER TYPE TENTER CLIP

MARSHALL and

Manufacturers of Quality

HIGH SPEED TENTER FRAMES Incorporate many new features for smoother operation, higher speeds and longer life. Available with heavy, medium or light duty, totally enclosed, drive units — also with wide parallel, narrow banjo and low profile rails with corresponding drive and idler sprockets. Economy in operation, low up-keep costs and elimination of all features that might cause damaged goods have been built into the design of all models. Speeds up to 250 y.p.m. are possible when frames are equipped with M. & W. Roller Type Tenter Chain.

MERCERIZING TENTERS Designed with heavy one-piece bed plate, heavy cast iron supporting members, totally enclosed overhead drive units and wide parallel rails. Can be equipped with M. & W. #6, #7 or #8 Style Mercerizer Clips. Very rugged construction throughout.

TENTERETTES & CLIP EXPANDERS Constructed for floor mounting, overhead suspension or movable on track. Built to any maximum width with either straight or hinged rails and in lengths from 30″ to 25′. Originated by M. & W. to answer special needs in finishing plants and laboratories. Use small M. & W. #12 Clips, either jaw or pin type.

PIN TENTERS Using either vertical or horizontal rails are designed for use principally with knitted fabrics or tufted carpet material. M. & W. #3, #3A, #10 and #15 Styles can be used and frames can be built to any required width and length.

BATCHERS & WINDERS Sturdy, trouble-free machines made in two sizes for any maximum cloth width. Increased rigidity for superior performance at high speeds. All working parts totally enclosed. Automatically wind at any desired tension or practically no tension at all, as controlled by adjusting knob. Both Standard and Heavy Duty M. & W. Batchers are fully equipped with expander and traveling carriage. New M. & W. Center Bar Winders for any width cloth are *not* so equipped, to eliminate cost of features you may not need — offer substantial savings in initial cost and installation and are internally wired so that only leads are needed for connection to power line. Winders can be made double for continuous operation.

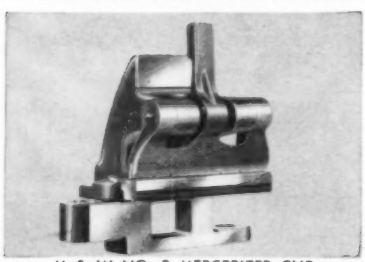
WEFT STRAIGHTENERS Electrically operated but manually adjusted and controlled. Three stationary rolls and two tilting rolls can be set to correct any ordinary skewed weft.

SWING PLAITERS Anti-friction bearings throughout. Designed for easy installation in any location in the plant.

LET-OFF STANDS Movable, with casters — or with fixed base, swiveling to permit easy alignment of the cloth.

SELVAGE UNCURLERS Increase tentering speed 100% on any frame, vertical or horizontal. Automatically uncurl selvages, control feed to tenter chain — self-adjust instantly to ensure neater, more even selvage uncurling than could ever be done by hand. Wholly efficient on all weights, types and fibers of flat-knit fabrics. Simple installation and easy maintenance. Assure flat selvages, reduce waste, speed subsequent operations.

OVERFEED EQUIPMENT Of different designs to meet individual requirements. Usually applicable to pin tenters and pin frames but can be used on clip type frames when equipped with M. & W. #20 Universal Clip. Overfeeds are easily adjustable and very accurate with all types and weights of fabrics.



M & W NO. 8 MERCERIZER CLIP

M & W NO. 20 UNIVERSAL TENTER CLIP

M & W NO. 3 PIN CLIP

WILLIAMS CORPORATION

Textile Finishing Machinery • Since 1920

ROLLER TYPE TENTER CLIPS M. & W. #11 Clips have set Roller Clip standards since 1940. Engineeerd for every type of operation, equipment and fabric.Precise performance up to 250 y.p.m. Each clip in chain is connected to next by a standard roller chain link — drive sprockets and idlers touch only the roller links (not the body of the clips), thus ensuring quiet operation and long life at high speeds with minimum friction. Nearly a million now in use, giving perfect results. Originated by M. & W.

TWO PIECE TENTER CLIPS M. & W. Two Piece Clips are a new development, originated by M. & W. for exceptional savings on costly down time. A single socket head cap screw and lock washer rigidly hold the two sections together — accurate machining also locks the two parts together and prevents any movement between them. In case of damage or wear, top section is promptly removed and replaced, leaving bottom of chain in place on frame — and operation can be resumed immediately. No expensive rivets to knock out and replace. All parts easily accessible, removable parts interchangeable. If whole chain needs repair, this clip speeds up removal — reduces repair cost. All advantages of standard M. & W. Clips, plus unequalled new two-piece convenience and economy.

MERCERIZER CLIPS Come in several styles such as #6, #7, and #8. The M. & W. #8 Clip is now the most commonly used and offers certain advantages. It is specially designed with raised extra supporting lug at top to equalize the pull and prevent tipping of the chain.

UNIVERSAL TENTER CLIPS M. & W. #20 Clips do away with multiple tentering units, which in turn reduces floor space requirement with resultant savings. Operate as regular clips on any standard frame — accommodate overfeeding if frame is equipped with overfeed device. Same operating speeds as conventional clips. No pins needed. Changes from regular to overfeed while frame is operating — assures uniform and accurate overfeeding up to 20%. This clip (Dunglar System) is made and sold in the U.S. and Canada exclusively by M. & W.

COMBINATION CLIPS Dual-purpose clips for either regular or pin tentering. Available in several styles to fit existing tenter rail dimensions. Easily and automatically set from one type of tentering to another.

PIN CLIPS & PIN PLATES Clips are made in several styles for both horizontal and vertical rail tenters. Pin plates are built to customer's design and specifications.

REPAIR PARTS The M. & W. plants at Providence and Greenville render prompt repair service, maintaining for the purpose a complete inventory of Tenter and Mercerizer Frame parts of all makes.

Machinery: Gears, bearings, shafts, bushings, sprockets, idlers, openers, top casing, etc., are available for immediate delivery.

Tenter Chain & Components: M. & W. repairs all makes of Tenter Chain and at all times carries in stock such items as rivets, bushings, plates, jaw inserts, controllers, etc.

Pin Plates: M. & W. makes a specialty of the repinning of old Pin Plates and the manufacture of new Pin Plates to any specifications.

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HIGH SPEED TENTER FRAMES

MERCERIZING TENTERS

TENTERETTES & CLIP EXPANDERS

PIN TENTERS

BATCHERS & WINDERS

WEFT STRAIGHTENERS

SWING PLAITERS

LET-OFF STANDS

SELVAGE UNCURLERS

OVERFEED EQUIPMENT

ROLLER TYPE TENTER CLIPS

TWO PIECE TENTER CLIPS

MERCERIZER CLIPS

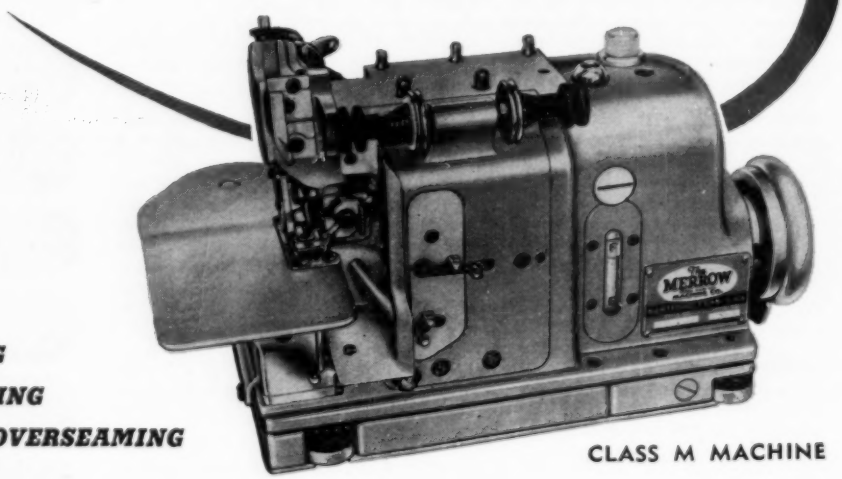
UNIVERSAL TENTER CLIPS

COMBINATION CLIPS

PIN CLIPS & PIN PLATES

REPAIR PARTS & SERVICE

MERROW MACHINES



CLASS M MACHINE

- ***OVEREDGING***
- ***OVERSEAMING***
- ***HEMMING***
- ***SERGING***
- ***SHELL STITCHING***
- ***CROCHET STITCHING***
- ***SHIRRING WITH OVERSEAMING***
- ***BUTT SEAMING***

"MERROWS" are extensively used in the manufacture of:

LADIES' SLIPS
PANTIES AND BRIEFS
CORSETS AND GIRDLES
ELASTIC KNIT ARTICLES
SWEATERS
ATHLETIC SHIRTS
POLO SHIRTS
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INFANTS' WEAR
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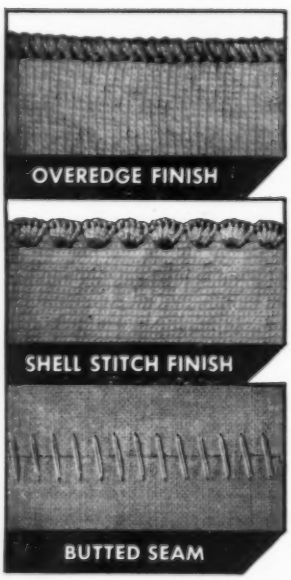
HANDKERCHIEFS
PILLOW CASES
BATHING SUITS
BLANKETS
SILVER CASES AND NOVELTIES
WORK GLOVES

CHILDREN'S CLOTHES (KNITTED AND WOVEN)
TROUSERS—SERGING, SEWING POCKETS AND FLY
LADIES' HOSE—WELTING TOPS, MOCK SEAMING, MENDING THIRDS
SKI OR LOAFER SOCKS
ANKLETS—ATTACHING TOPS
LAUNDRY AND FRUIT BAGS
PIECE GOODS—JOINING ENDS TO FACILITATE PROCESSING



OVERSEAMING OR EDGE FINISHING MACHINES

Merrow High Speed Overseaming or Edge Finishing Machines produce a finish made up of one, two or three independent threads. They are adapted for use on knitted and woven articles of practically every description where the operations of overseaming, hemming and edge finishing are involved. They can be used on cotton, wool, silk, rayon, nylon and other synthetics, and can handle weights from handkerchiefs to heavy outerwear. Most of these machines are provided with trimming devices and with a differential or gathering feed.

PLAIN CROCHET, BLANKET HEMMING AND SHELL STITCH MACHINES

These Merrow Machines produce a variety of crochet finishes, both plain and shell stitch. They are designed to produce shells of several sizes and may be arranged to make either a single row or two rows and to insert a tape under the finish if desired.

BUTT SEAMING MACHINES

Merrow Butt Seaming Machines are used for joining cloth for process finishing operations such as dyeing, bleaching, printing, shearing, etc. When opened flat by the tension of processing, the butted seam permits the joined pieces to assume an end-to-end relation. They are used on cotton, wool, silk and synthetics, and when cloth is either wet or dry.

SAMPLES, CATALOGS, ETC.

Samples of the work from Merrow Machines, together with complete information, will be supplied on request. We will be glad to demonstrate the work of these machines on your own material.

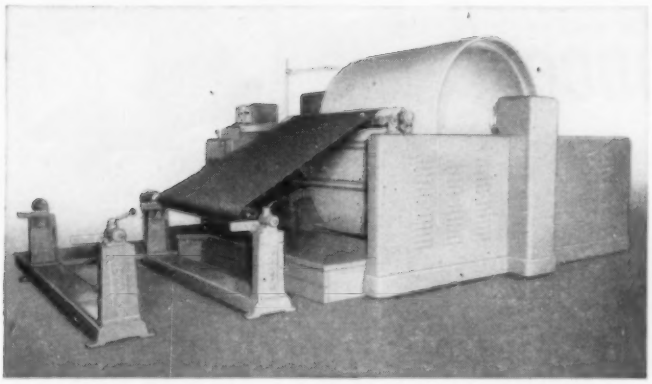
TRADE MARK REG

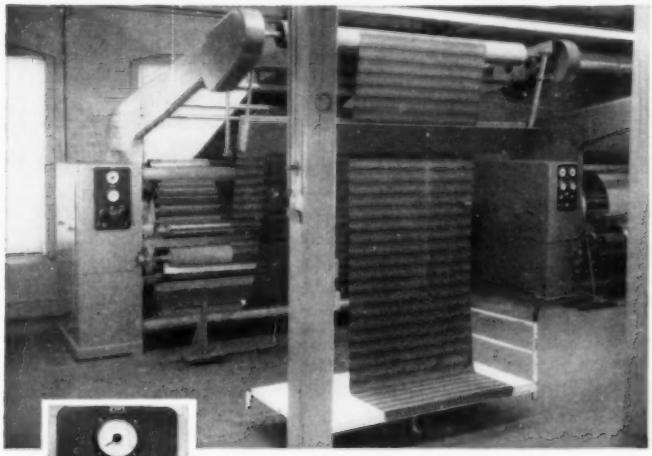
The **MERROW**
MACHINE COMPANY

ESTABLISHED 1838 INCORPORATED 1894

2803 LAUREL STREET•HARTFORD•CONN., U.S.A.

Gessner sets high production and quality records for decating and napping



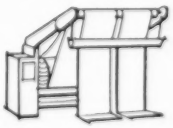


24 Roll Single Acting Hi-Torc Napper for fleeces, zebilines, suedes, vicunas, cashmere and camel's hair coatings.

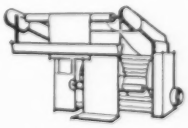
The hydraulically powered GESSNER VERSAMATIC SEMI-DECATING MACHINE, with a 36", 48" or 60" diameter cylinder, infinite speed variations, controlled pressure rolls, automatic apron alignment and apron tension reaches high operating speeds. The 60" Versamatic shown here, for example, decates 8 pieces or more of woolens or worsted, and upwards of 1000 yards of synthetics per loading.

The famous torque controls on the five different models of GESSNER HI-TORC NAPPERS indicate exact napping results, and are responsible for the tremendous increase in production — from two to five times what you would expect.

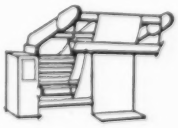
There is a HI-TORC NAPPER for every fabric, every finish.



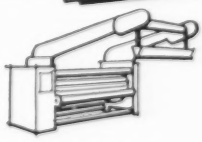
30 Roll Double Acting Hi-Torc



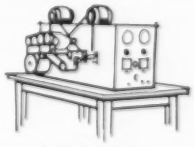
24 Roll Double Acting Hi-Torc



24 Roll Single Acting Hi-Torc



24 Roll Knit Goods Hi-Torc



Laboratory Hi-Torc

DAVID GESSNER CO.

WORCESTER, MASS.

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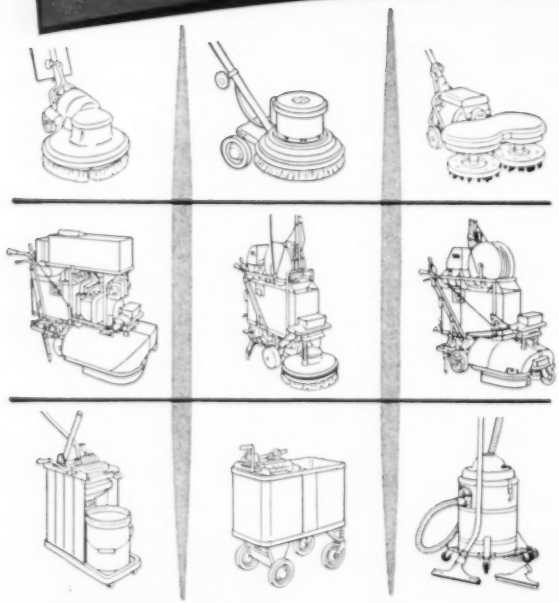
Keep your floor-maintenance men happy . . .

with *Job-Fitted* EQUIPMENT!

Choose from the COMPLETE *Finnell* Line

More than a score of models and sizes permits selection of the equipment that's exactly right for your job!



However much a maintenance man may want to do a good job, and at the same time show savings in labor costs, he's *stymied* if the machine is too small, or too large, or is otherwise unsuited to the job. Different floors and areas call for different care and equipment. That's why *Finnell makes more than a score of floor-maintenance machines.* From this complete line, it is possible to choose equipment that is correct in size as well as model . . . that provides the maximum brush coverage consistent with the area and arrangement of the floors.

Finnell offers *Conventional Polishing-Scrubbing Machines* in both concentrated and divided-weight types, each in a full range of sizes . . . a *Dry-Scrubber,* with self-sharpening brushes, for cleaning grease-caked floors . . . *Combination Scrubber-Vac Machines* for small, vast, and intermediate operations, including self-powered as well as electric models . . . *Mop Trucks* . . . a *Wet and Dry Vacuum Cleaner,* in baked enamel or stainless steel, with 1½ hp By-Pass Motor. In addition, *Finnell* offers a full line of fast-acting *Cleansers* for machine-scrubbing . . . *Sealers* and *Waxes* of every requisite type . . . *Steel-Wool Pads* and other accessories – *everything for floor care!*

In keeping with the *Finnell* policy of rendering an individualized service, *Finnell maintains a nation-wide staff of floor specialists and engineers. There's a Finnell man near you* to help solve your particular floor-maintenance problems . . . to train your operators in the proper use of *Finnell Job-Fitted Equipment and Supplies* . . . and to make periodic check-ups. For consultation, demonstration, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 1900 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

Birch Brothers, Inc.

1883

BOX 19, SOMERVILLE 43, MASS. USA

PRospect 6-3512

BIRCH BROTHERS, INC. 75th Anniversary 1883-1958 SOMERVILLE 43 MASS.

TEXTILE DYEING and FINISHING MACHINERY
CLOTH HANDLING EQUIPMENT
MILL SEWING MACHINES

Rugged, Simple Flexible

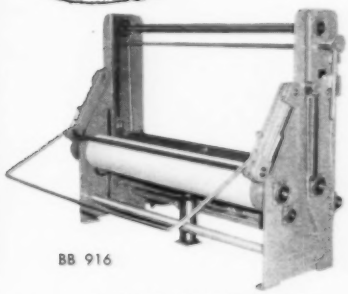
BB 925

LOW-COST
5-ROLL LAB CALENDAR

PRECISION EQUIPMENT for THESE OPERATIONS

- BATCHING (Center Wind, Cut Off, Surface Wind)
- BOILING OFF
- BURLING
- CALENDERING (Laboratory)
- CARBONIZING
- COMPENSATORS
- CRABBING
- DETACKING
- DETWISTING
- EXTRACTION (Squeeze Rolls, Vacuum)
- FOLDING (Open Width, Rope)
- GUIDING
- INSPECTING
- MEASURING
- OPENING CLOTH
- PADDING
- PERCHING
- RE-ROLLING (Center Wind, Cut Off, Surface Wind)
- SCRAYS
- SCUTCHING
- SEWING (Gray Room, Portable, Railway)
- SEWING & ROLLING
- SINGEING
- SOAPING (Open Width)
- SPLITTING (Knit Goods)
- SPREADING
- STRAIGHTENING (Weft)
- STRAINING (Dyestuffs)
- TACKING
- WASHING (Open Width)
- WETTING OUT
- WINDING (Center Wind, Cut Off, Surface Wind)

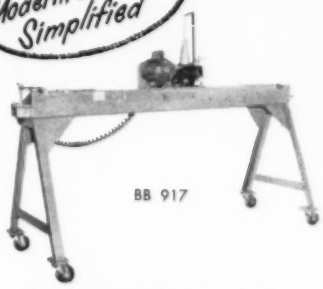
High-Speed Heavy-Duty



BB 916

2 ROLL AUTOMATIC
CUT-OFF WINDER

Modern, Low Cost Simplified

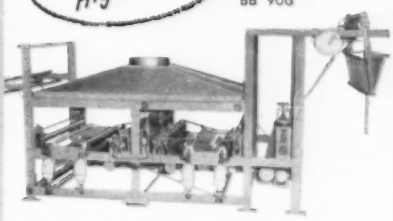


BB 917

CHAIN STITCH RAILWAY
SEWING MACHINE

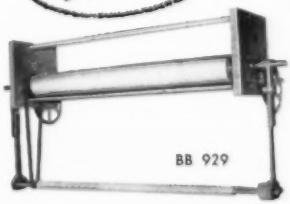
Versatile High-Speed

BB 906



OPEN FLAME
WOOLEN and WORSTED
SINGER

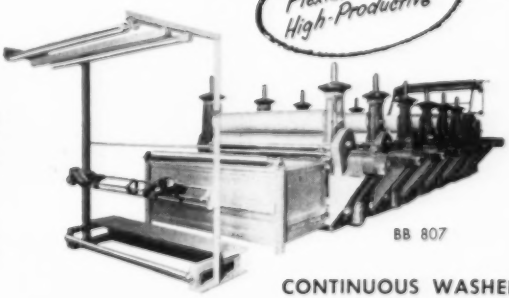
Simple Economical



BB 929

CEILING FOLDER

Flexible, Rugged High-Productive

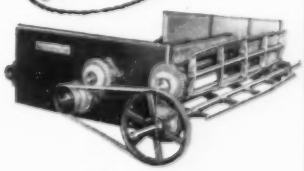


BB 807

CONTINUOUS WASHER

100% Stainless Steel

BB 903



HIGH SPEED
SCUTCHER FOR CORROSIVE
APPLICATIONS

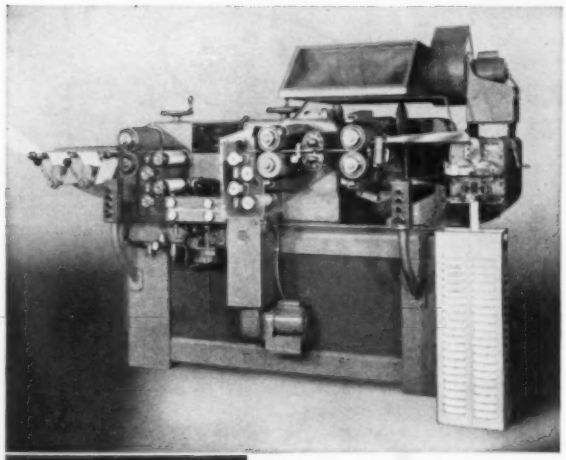
SOUTHERN REPRESENTATIVE: JOHN C. COSBY, BOX 212, GREENVILLE, S.C. — CEdar 5-5926

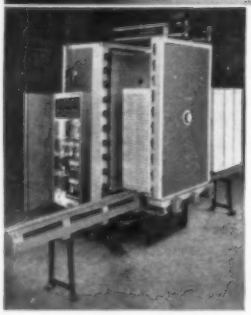
TURBO
SINCE 1929

TURBO MACHINE COMPANY, LANSDALE, PENNA., U. S. A.

SOUTHERN SALES REPRESENTATIVES: Parrott and Ballentine
501 South Carolina National Bank Building, Greenville, S. C.

TOW PROCESSING EQUIPMENT





TURBO STAPLER
The one-machine, modern way to tow processing. Compact and complete, only 9 feet long, 3½ feet wide and 5 feet high.

TURBO FIBER SETTER
For steam treating fibers in bulk form — relaxing and setting. Used in the production of high-bulk yarns. Automatic timing and temperature controls assure uniform results.

The Turbo Stapler converts synthetic fiber tow into controlled length sliver — with or without heat-stretching. Changes in fiber length, in denier and crimp are made quickly and easily. The sliver can be given any desired hand. All elements — stretch zone, break zone and crimp zone — are in one machine. No attachments are necessary. Changes in fibers, or in fiber characteristics can be made without modification of the machine. By maintaining the original parallelism of the tow, doubling, drafting and roving operations are reduced and costs cut. An extremely compact unit, accurately controlled by push-buttons, the Turbo Stapler takes the guesswork out of tow processing to provide precision, economical production.

TURBO FINISHING MACHINERY

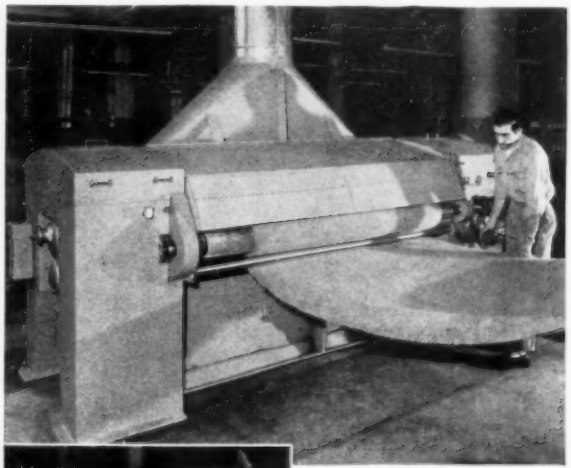
Woolens, worsteds and high-pile fabrics depend on finish for sales appeal.

With the Turbo Electro-Finisher, any knitted or woven material can be processed expertly, quickly and easily. The machine features a grooved, electrically heated cylinder. Surface fibers are separated, straightened and lustered. All fabrics can be polished and given a rich hand, or have appearance and character changed for entirely new effects.

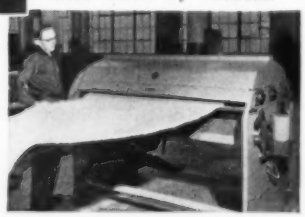
The Turbo Shearer is used for rough-shearing and final shearing. Shearing in one pass from 10/1000 of an inch to ¼ inch.

The Turbo Wet Applicator applies liquid to the face of the fabric. Adjustable brushes control exact amount of liquid and depth of penetration.

TURBO ELECTRO-FINISHER



TURBO SHEARER
— production speed 3 to 30 yards per minute. For fabrics up to 62 inches wide. Fabric to be sheared held down by vacuum.

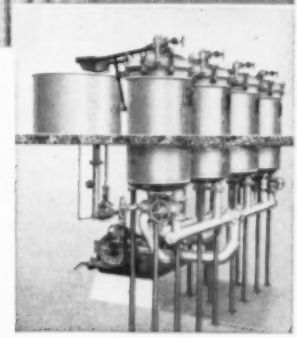


TURBO WET APPLICATOR
— production rate 3 to 30 yards per minute on fabrics up to 62 inches wide.

TURBO
SINCE 1929

SMITH-DRUM BEAM AND PACKAGE DYEING EQUIPMENT

SMITH-DRUM PACKAGE DYEING MACHINES



SMITH-DRUM IN-LINE BEAM AND PACKAGE DYEING MACHINE

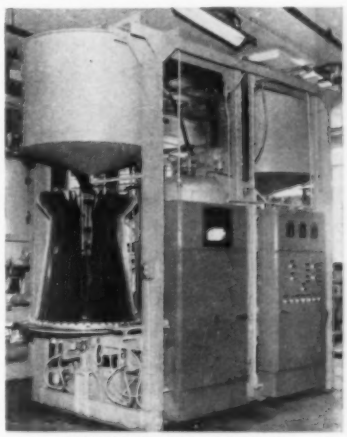
The Smith-Drum Package Dyeing Machine, available in many sizes, is designed for all high temperature dyeing. A high pressure sample package kier permits sampling under operating conditions and a high pressure dye feed kier provides for making "adds" . . . without cooling or shutting down. Supplied with automatic recording control panel. This machine provides increased liquor flow to meet all dyeing requirements.

Smith-Drum dyeing, extracting, and drying equipment is described in folder — available on request.

TURBO-BREWIN MACHINE

For Complete Hosiery Dyeing and Finishing

In the Turbo-Brewin Machine, stockings are preboarded, scoured, dyed, finished, and post-boarded, ready for pairing, in just 7 minutes. Operation is completely automatic. There are two dye tanks and two groups of 60 forms, production is practically continuous. There is a minimum of handling. Greige stockings are put on the forms, dyed, finished, and boarded, then stripped off, ready for pairing.

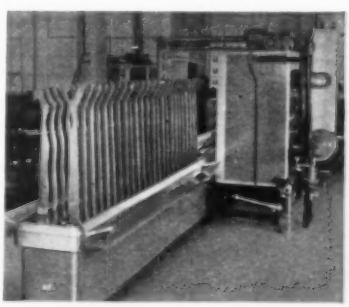


TURBO-BREWIN MACHINE

Less handling means less mends, more "firsts". Savings in rejects, in floor space, and in labor are tremendous. Produces beautiful stockings, with even color and a soft hand.

TURBO BOARDING/FINISHING MACHINES

For the boarding and/or finishing of stockings, socks, sweaters and panties, Turbo builds a complete line of push-button operated, precision engineered machines that are profit builders for leading mills.



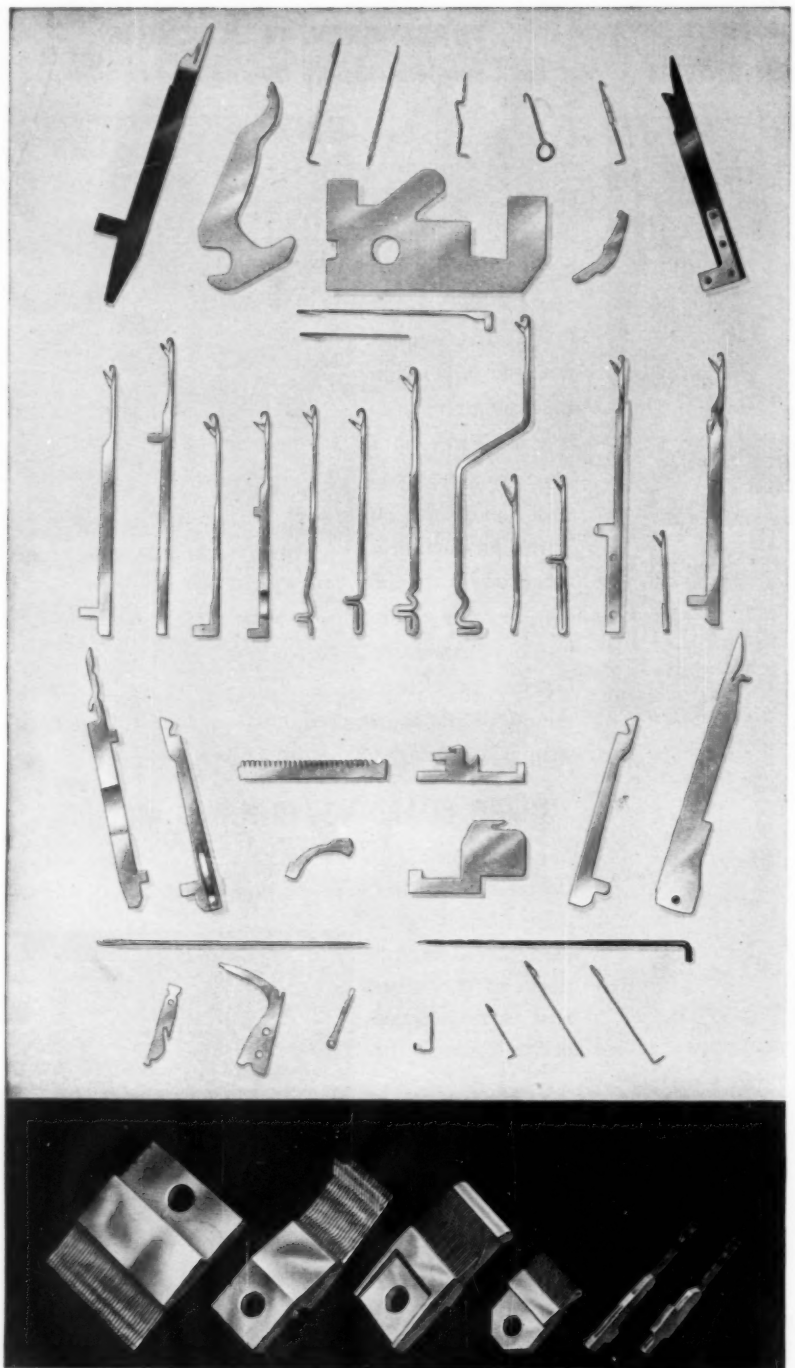
At the right is the Turbo ADS-96, a combination machine for preboarding and/or finish boarding. With 96 forms, it offers production up to 260 doz. pairs per 8-hour day.

There are technical bulletins and information for all precision Turbo Machines. Inquiries are welcome and will receive prompt attention.

TURBO
SINCE 1929

TURBO MACHINE COMPANY
LANSDALE, PA.

Builders of Precision Machines for the Textile Industry for Over a Quarter Century



Nearly every competitive advantage starts with the machine

The products illustrated here are a few of many needles and parts available for every type of knitting — Full-Fashioned, Tricot, Raschel and Circular—and every make of knitting machine. Textile Spring-Beard Needles and Parts, and Arrow Latch Needles and Parts are made to "Textile" standards of precision. Prompt deliveries from stocks in Reading, Pa., Asheboro, N. C. and Manchester, N. H. . . . Write us your requirements.

Textile

SPRING-BEARD NEEDLES

Arrow

LATCH NEEDLES

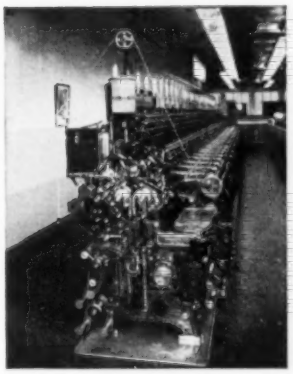
Wire Products Division

TEXTILE MACHINE WORKS • READING • PENNA.

In the South: Asheboro, N. C. In the North: Manchester, N. H.

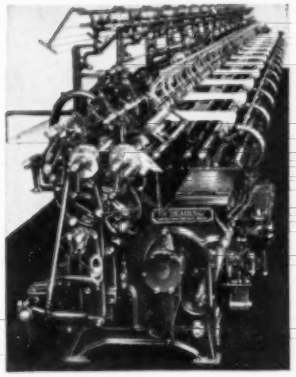
Builders of Textile Machinery Since 1900

Nearly every competitive advantage starts with the machine



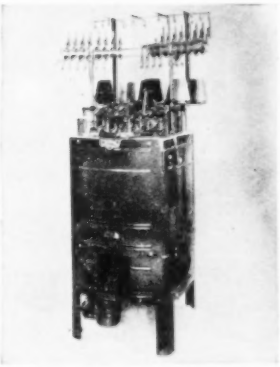
the "READING 100" Full-Fashioned Knitting Machine

The Reading "100", with mill-proved automatic features, almost thinks for itself — automatic narrowing heads, automatic friction boxes, automatic two-carrier friction box for main and welt yarns, automatic welt bar unhooking, automatic thread separator. These machines assure continuous, uninterrupted production, lower per dozen cost, and they place emphasis on greater machine efficiency. 30 section. 51 to 75 gauge.



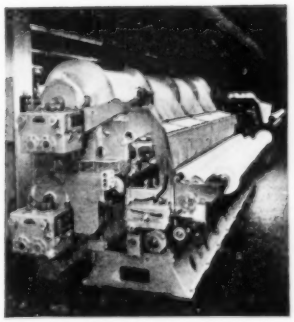
the "READING" Full-Fashioned Outerwear Machine

Within practical limits, there is virtually nothing your designer can create that cannot be successfully produced on the "Reading" Full-Fashioned Outerwear Machine. All-over lace or mesh fabrics, stripes or insertions, intricate patterns, mock ribs; intarsia patterns with closed split between yarns, permitting full length design or insertions with continuous or interrupted pattern; three-colored stripes in any sequence with automatic control. Body machines —10, 12, 13, 15 sections; 28", 31.5" needle bars; all practical gauges 9 through 39. Body-Sleeves—20 sections; 20" needle bars; all practical gauges 9 through 39.



the "READING" CK-A Circular Knitting Machine

The new "Reading" CK-A Circular Knitting Machine cuts pattern-knitting time in half. There are four feeds or knitting stations, each equipped with four fingers. Standard machine includes automatic lubricating system, individual motor drives, electric stop motions. 3¾ inch diameter cylinders, 84, 112, and 168 needle count. Makes inlaid patterns in complete range of men's and boys' sizes.



the "READING" Tricot Machine

The new "Reading" Tricot Machine doubles production of the finest tricot fabrics with controlled quality in every yard. Double production . . . yard after yard of clear, even fabric . . . and the quality never varies. 800 courses per minute and better. Heavy, rigid construction throughout — the base alone is a 2-ton casting. Balanced motion is achieved by an eccentric mechanism which replaces conventional cams.

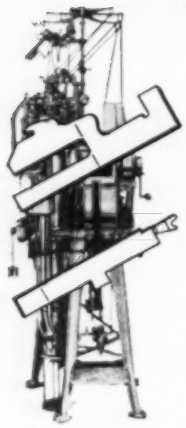
▼

Manufacturers working with "Reading" Machines value "Reading" Service as second only in importance to the machine itself.

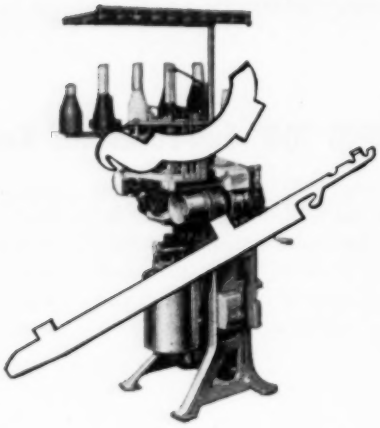
Other Textile Products:
The "Reading" Braiding Machine
Textile Spring-Beard Needles
Arrow Latch Needles

TMW . TEXTILE MACHINE WORKS, READING, PENNA.

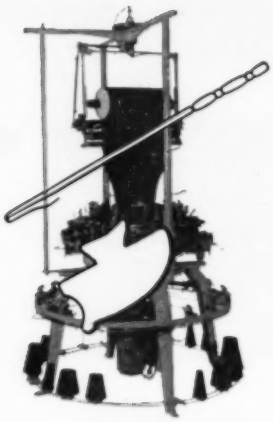
Builders of Textile Machinery Since 1900



Scott & Williams



Bentley



Tompkins

Supreme

IVES Replacement Parts

are "tailored" to fit *exactly* the machines for which they are intended. That's why they are used for knitting the world's finest fabrics. All of IVES' needles and parts are specially hardened and tempered, insuring smoother and longer wearing parts that reduce your costs and increase your profits.

Contact IVES if you operate these machines:

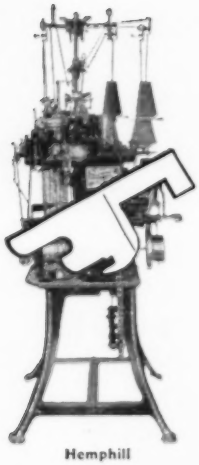
Supreme ● Fidelity ● Tompkins

Kidde ● Precision ● Brinton

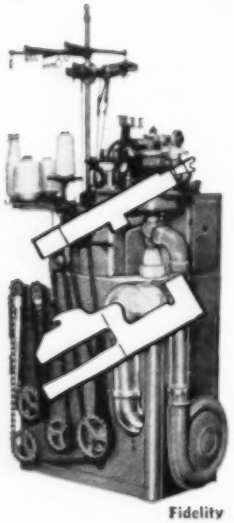
Wildman ● Crane

Banner ● Reiner

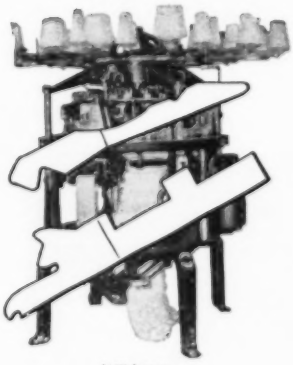
Scott & Williams ● Bentley



Hemphill



Fidelity



Wildman

THE LOYAL T. IVES COMPANY, INC.
NEW BRUNSWICK, N. J.

Model SAAF-C

Plain, Variable Striped and Patterned Jersey

Model SAAF-O

Sleeve and Body Jersey with Elastic Rib Trim & draw-thread separations

Model MLT-SA

Plain and Striped, Regular and Long Loop Terry

Model SA; SAR-PP

Plain, Striped or Patterned, 1x1 and Swiss Rib with draw-thread separators

Model LRP

"Vent-Knit" Patterned mesh

Model ROF

Jacquard-Type Floatless Patterns

Model MJ

Body Size Jersey

Model IC

Fleece Coatings

Models ML; MLV

Pile, Loop and Plush

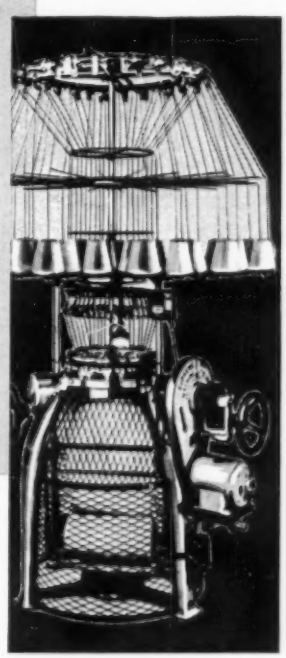
Model SAI-PP

Interlock

Model HP

High Pile, Imitation Fur, Lining Fabrics and Carpetings

SPECIALIZED INDUSTRIAL FABRICS



THE BEST-SELLING FABRICS OF TODAY AND TOMORROW ARE *PROFIT-KNIT* BY SUPREME MACHINES

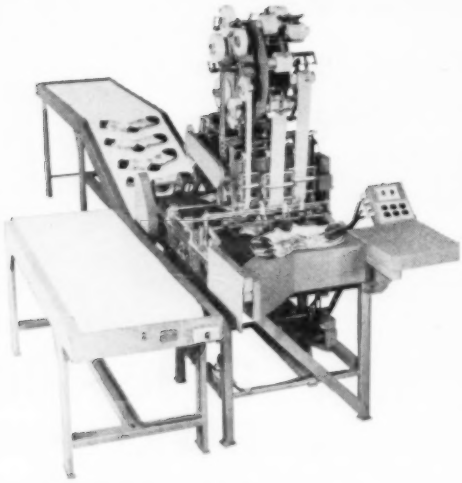
New and faster ways to knit the fabrics the world wants — that's the formula responsible for Supreme's dynamic line of successful circular knitting equipment.

By giving the outerwear and underwear industry higher production, market-meeting versatility plus new types of fabric, Supreme has opened new routes to profit. Today, Supreme research is smashing more profit barriers. It is finding new ways to give knitters more production per square foot of space, more poundage per operator, more profit per day.

When you modernize, be sure to get the facts on Supreme's newest profit-knitting developments.

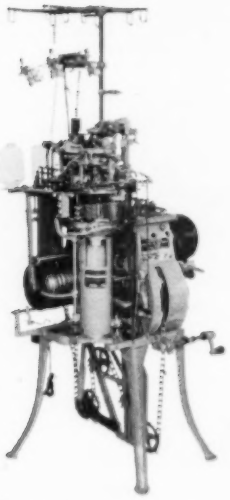
SUPREME
KNITTING MACHINE CO., INC.
94-02 104th STREET, OZONE PARK 16, N. Y.
Southern Representative and Showroom:
The Malluck Co., 914 East 4th Street, Charlotte, N. C.

SK—185



BOWMAN (AUTOMATIC TRANSFER MACHINE)

Increase folding and boxing production! This machine paces all three operations. One transfer machine will do the work of two or three girls now on your payroll. Applies two or three transfers simultaneously, automatically positioning socks and stacking them in pairs. The Bowman will apply transfers to 1,200 to 1,500 dozen pairs every 8 hours.



CAROLINA K2FS

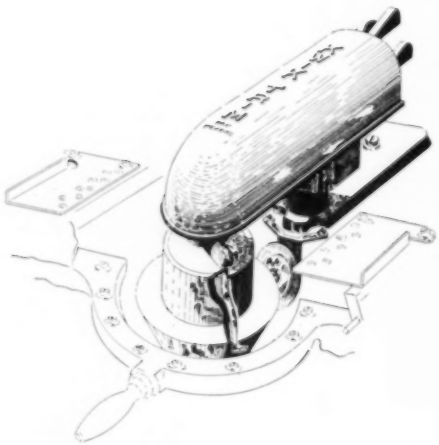
Ladies two feed, 400 needle seamless hose knitter. Knits five dozen pairs of stretch or conventional 15 denier hose every 24 hours. Available in 3½" or 3¾" diameter 400 to 474 needle. 75/80 gauge equipped with electric stop motion, mesh, gusset toe and Y heel attachments. Automatic take-up attachments available.

MORRIS SPEIZMAN, PRESIDENT

CAROLINA KNITTING MACHINE CORP.

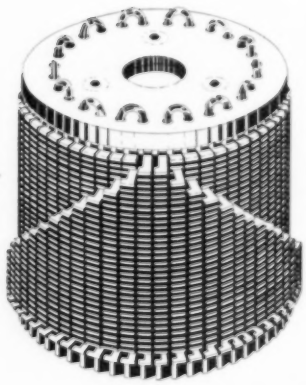
508 W. 5th St. Charlotte, N. C., USA

Phone EDison 4-5546



KWIK-TRIM

A revolutionary new device enabling your knitters to run 50% more machines than at present. Guaranteed to save up to 1 pound of valuable yarn in every seven dozen socks. Fits your present SCP or SCOP without radical changes in machine set-up.



HONEYCOMB (QUICK CHANGE PATTERN DRUM)

The amazing new Honeycomb consists of over 1900 jacks, each securely positioned in a separate compartment. These jacks can be locked for extension or withdrawal. Proven to be the safest, quickest way to change patterns on Banner Machines.

MORRIS SPEIZMAN, PRESIDENT

SOUTHERN MILL EQUIPMENT CORPORATION

508 W. 5th Street ● Charlotte, N. C., U. S. A. ● Phone EDison 4-5546

NOW! —Reiner Offers Equipment to 4 Branches of the Textile Industry

The Mark of Quality—

1. Warp Knitting

- High Speed Tricot Machines (2—3—4 bars).
- High Speed Tulle Machines.
- All Purpose Warping Machines (full width and sectional).
- A full Line of Creels.

2. Full Fashioned

- Full Fashioned Hosiery Machines (4 sections — 75 gauge).
- Full Fashioned Sweater Machines.
- Schaffhouse Flat Power Knitting Machines.

3. Weaving and Finishing

- Quill and Bobbin Refinishers.
- Beam Warpers.
- Reiner-Famatex Tenter Frames.
- Rabo Permanent Pleating Machines.
- Menschner Gauged Doubling, Measuring, and Rolling Machines.
- Menschner Cloth Control and Marking Device.
- Gerber Wet Finishing Equipment

4. Embroidery

- Automatic Shuttle Embroidery Machines (10 and 15 yards).
- Multihead Jacquard Embroidery Machines.
- Automatic Bobbin Winding Machines (for stitching and quilting).
- Jacquard Pattern Repeating Machines.

Your Reiner representative will be glad to call and discuss your needs with you

In the manufacture and sale of these machines, we shall continue to live up to the REINER tradition of QUALITY machines, a reliable advisory and parts service, and careful, conscientious attention to your orders and wishes.

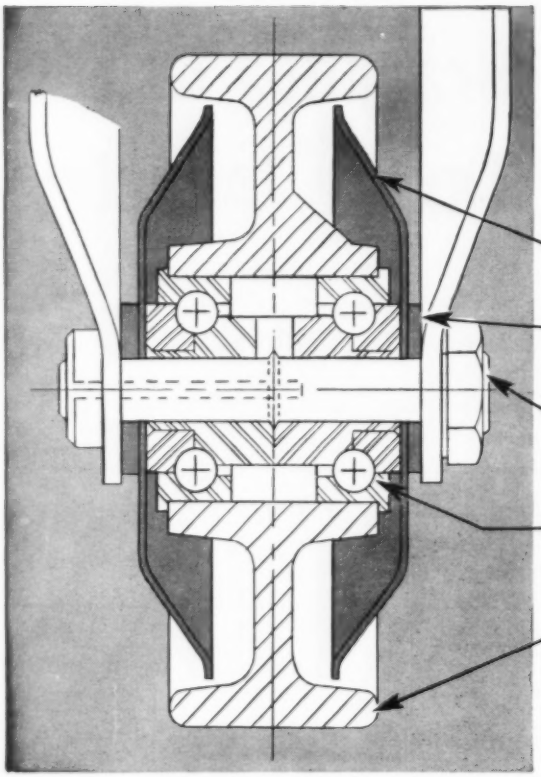
All Reiner departments are working full time — thanks to our customers.

ROBERT REINER, INCORPORATED

Telephone: UNion 7-0502-05 — From New York City call LOngacre 4-6882.

550-564 Gregory Ave. *An Honored Name in Textile Machinery Since 1903* **Weehawken, N. J.**

Bassick casters for textile mills reduce maintenance costs



IMPROVED THREAD GUARD PREVENTS CLOGGING

• Bassick engineers came home with the facts after a first-hand look at caster operating conditions in textile mills. The facts brought back are responsible for these new casters developed to give you better materials handling and lower maintenance costs. Check the construction features shown in the diagram and you'll see what we mean:

A. Carefully designed and formed steel thread guards are locked in position.

B. Spacer washer gives ample clearance between caster leg and thread guard—a vital point. In normal usage, threads *cannot* be wedged in here—they fall on through. If accumulation occurs, it is easily removed without disassembling.

C. Bolt-and-nut removable axle with pressure fitting in head for easy lubrication of wheel bearing.

D. Four-in. semi-steel wheel in all textile casters has top-quality ball-bearing action for easier rolling. (Other 4″ wheels and all 5″ and 6″ sizes have roller bearings.)

E. Smoothly rounded tread has no sharp edges to damage floors.

...plus Bassick's famous double-ball race construction

Extra-efficient ball-bearing action swivels easier, lasts longer in tough assignments. Fully case-hardened bearing raceways for extra durability, longer service life.

FOR SMOOTH-ROLLING DOFFING TRUCKS

This special rugged 4″ steel caster with easy-rolling, ball-bearing, smooth-tread, semi-steel wheel is made to give years of trouble-free performance. Low in first cost, and low in maintenance needs, it is the ideal caster for doffing trucks.

SPECIAL NO. 4381-2B-1A

THE BASSICK COMPANY
Bridgeport 5, Conn. *In Canada:* Belleville, Ont.

Bassick — A DIVISION OF STEWART SW WARNER

MAKING MORE KINDS OF CASTERS ...MAKING CASTERS DO MORE

THERE'S A BASSICK CASTER FOR EVERY JOB!

Bassick textile casters are available with rigid or swivel action in 4″, 5″ and 6″ sizes. Wheels may be ordered in CANAPHIN (durable canvas impregnated phenolic composition that's easy on floors), ATLASITE (non-brittle rubber composition), BACO-NEOPRENE (soft rubber) and SEMI-STEEL. Get in touch with your Bassick industrial distributor for facts and figures on how Bassick textile casters can save you money while doing a better job for you.

ND FACTS

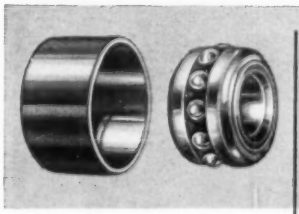
HERE'S NEW DEPARTURE'S COMPLETE LINE OF SEALED BALL BEARINGS FOR TEXTILE MACHINERY

New Departure textile bearings are made with integral closures to prevent leakage of lubricant and contamination of goods. All are smooth running, low friction ball bearings permitting higher speeds for faster production—longer service life.

Many are lubricated and sealed for life. Others use New Departure's Injection-Relubrication system. This permits revitalization of bearing lubricant for increased bearing life.

Write for full information on New Departure textile ball bearings, or call your New Departure sales engineer. Naturally, there's no obligation.

SEND FOR TEXTILE BALL-BEARING CATALOG TEX-1, NEW DEPARTURE, BRISTOL, CONN.

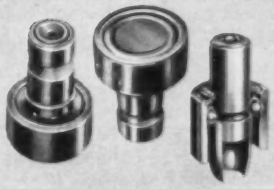


SPINDLE BEARINGS

. . . Cylindrical outer race permits removal of spindle from bolster without removing bolster from rail. Used for step bearings, but also used in high-speed spindle applications.

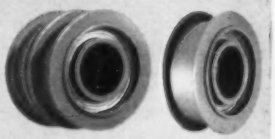
TREADLE ROLL BEARINGS

. . . permanently lubricated for long service. Designed to eliminate sparking. Double seals prevent leakage of lubricant, keep out dirt and lint.



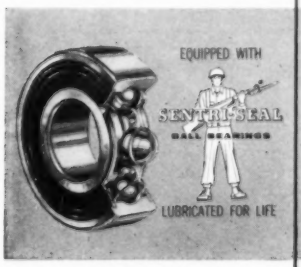
TENSION PULLEY BEARINGS

. . . available for both vertical mounting of idler or tension pulleys or horizontal mounting of tape tension pulleys.



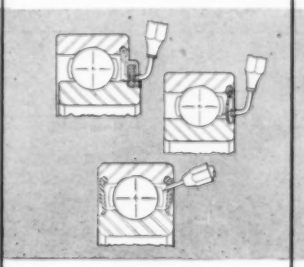
SHEAVE BEARINGS

. . . for automatic looms. Self-sealing assures protection for textiles, eliminates relubrication problem. Designed to permit nesting in gangs on harness sheave supporting shaft.



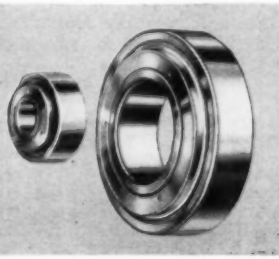
SENTRI-SEALS

. . . keep lubricant *in*, seal *out* dust, dirt and moisture for life. Sentri-Seals are synthetic rubber with spring steel rings molded in. Available in a wide variety of ball bearings.



INJECTION-RELUBRICATION SYSTEM

Hollow needle and metering oiler extend grease life in bearings for many months in high-speed, long-service applications.



FELT SEAL

. . . annular ball bearings are protected from dirt, retain lubricant by integral felt closures. Complete line from 5mm. to 2¾" bore. Relubricated by injection-relubrication.

ADAPTER BEARINGS

. . . easily applied to shafts; positive lock. Pre-lubricated, sealed. For moderate loads and speeds. Spherical or cylindrical O.D. for shafts ½" to 2 7/16" dia.

1908–1958 GM FORWARD FROM FIFTY

NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

EAGLE
OILERS and CANS
THE COMPLETE LINE

Eagle high-quality oilers and cans are made in all styles and sizes, for every purpose. Efficient design and sturdy construction assure economical, lasting service.

Copperite

Steel Bench Oilers

for the mechanic, engineer, plumber, machinist, car owner, . . . flexible, straight or angle spouts.

Midget Household Oilers

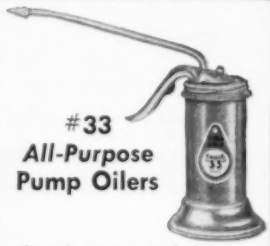
for home or office use in oiling sewing machines, fans, hinges, washing machines, typewriters, etc.

Hydraulic Pump Oilers

keep moving parts of tractors and other large equipment running smoothly . . . flexible, straight or angle spouts.

Harvester Oilers

fit holders on practically all farm machines . . . dependable, inexpensive.

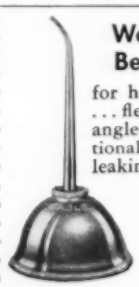


#33 *All-Purpose* Pump Oilers

for home workshops, farms, service stations, factories, hobbyists, etc. . . . dependable, reasonably-priced.

#66 *All-Purpose* Pistol Grip Oilers

modern-design oilers of many uses . . . one drop or a full stream of oil.



Welded Steel Bench Oilers

for heavy factory use . . . flexible, straight or angle spouts . . . optional seal tip prevents leaking.

Transparent Household Oilers

contents always visible . . . plastic bodies unaffected by oils or kerosene . . . give long, useful service.

#99 Seal-Tip Tool Kit Oilers

handy for all tool kits . . . for oiling meters, gauges, and many other factory uses.

Welded Steel Supply Cans

storage and filling cans for railroads, mills, factories, mines, foundries.

Safety Cans

approved by Underwriters Laboratories and Factory Mutual . . . safe for handling all flammable liquids . . . trigger or free-swing handle types.

Galvanized Oil & Gasoline Cans

one piece seamless drawn dome shaped . . . no top seam . . . no side seam . . . made from 26 gauge galvanized steel sheets.

"A" Line *All-Purpose* Galvanized Fillers

dependable, practical, reasonably priced . . . meets all filler requirements for power-driven garden and farm implements.

ORDER FROM YOUR SUPPLIER
Write for free catalog showing the Complete Eagle Line

EAGLE MANUFACTURING COMPANY, Wellsburg, W. Va.

Serving the Trade Since 1894

ALL EAGLE Pump Oilers Guaranteed 5 years!

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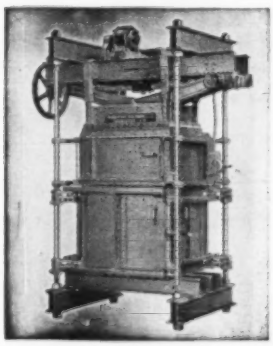
(Established over 80 Years)

3150 W. Burleigh St., Milwaukee, Wis.

LOGEMANN BALING PRESSES

All Sizes and Types for All Purposes

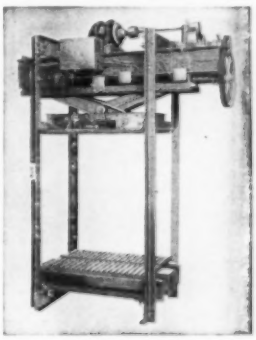


YARN BALERS

SPECIAL FEATURES: (1) Easy to load: Individual doors facilitate piling of skeins; after lower doors are closed, top door in front permits complete filling of box. (2) Greater pressure: The toggle-type baler develops more power than other mechanical presses, therefore, produces higher bale density. (3) Speed Press completes its stroke in less than 35 seconds, without complex gear shifts, belt shifts or motor switching. (4) Convenient to burlap: Doors open all around; burlap can be completely sewed on the bale while under compression.

BALE SIZE: For yarn bailing, Model 26-MS, making bales 36" x 24" x 24", is generally accepted as standard, but variations in bale dimensions are obtainable where such appear desirable.

OPEN BALERS



RIGID CONSTRUCTION: Heavy angle-iron side frames and I-beam stress members insure far greater rigidity than the rod-type corner posts. Drive frame has no swinging members, eliminating complicated belt or electrical connections. Designed with liberal factor of safety —much higher pressure ratings would be permissible.

TOGGLE OR HYDRAULIC: Both types built in wide range of platen dimensions and clearances to suit requirements. Toggle-lever type either belt or motor drive. Hydraulic units complete, including pumps, to give any speed and pressure desired.

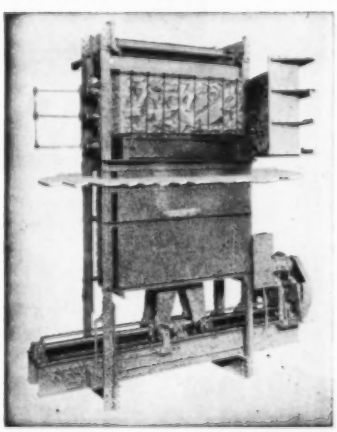
PORTABLE TRUCKS: Either type can be built with tracks for portable trucks on which material can be stacked, drawn into press for baling, and finished bale transported to storage or shipping platform.

Textile plants having special baling-problems are invited to outline their conditions and requirements in detail, so that experienced LOGEMANN baler engineers may make recommendations and offer the proper type of equipment. Inquiries should specify the character of material to be baled, preferred size or weight of bale, and quantity to be baled in a given period of hours.

POWER BOX BALERS

SIZES — TYPES: Built in many box dimensions, one-floor or through floor type, upstroke or downstroke. Can be built with movable boxes, rolling on racks, utilizing several boxes with one master press.

SPEEDY & POWERFUL: Without special mechanisms or shifting device, and at uniform motor speed, compression platen moves at high speed through the first part of its stroke, gradually slowing down as extreme pressure is applied. On return stroke, action is reversed. High bale production easily obtainable. Utilizing leverage in place of direct pull, toggle presses make tighter bales, with less horsepower, than any other mechanical baler. Upkeep and maintenance are far lower, due to the few moving parts.

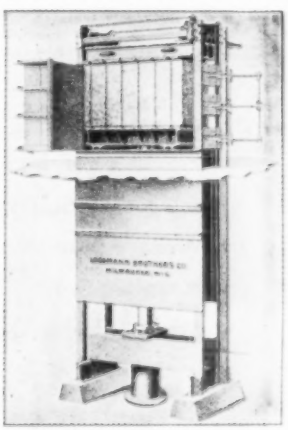


HYDRAULIC BALERS

Outstanding advantages are simplicity, extremely low maintenance cost, freedom from usual operating troubles, and controlled pressure.

SPECIAL FEATURES: Skilled help or special training not needed to operate these presses with complete safety. No other type produces equal bale density. Yet maintenance is far less. Ram, platens and doors only moving parts. Pressures can be accurately controlled. Doors release and expose three sides of bale for convenient wiring and burlapping.

ALL SIZES: Bale dimensions and weights to meet varying requirements for different materials can be obtained. Either up or down stroke to suit. With pump of proper size and deep press box, extremely high bale outputs are readily attained.



Halsey Taylor COOLERS & FOUNTAINS

space-saving package unit

for textile mill use

Here are just some of the many types of coolers you'll find in the new Halsey Taylor line. For office or plant use, for hazardous locations, for factory cafeterias and dining rooms, for any of today's vital needs, Halsey Taylor makes the right cooler for the purpose. Each has the extra advantages of up-to-the-minute engineering, built-in dependability, freedom from maintenance. Get our latest catalog or see Sweet's.

THE HALSEY W. TAYLOR CO., WARREN, OHIO

REDUCE MAINTENANCE of AIR WASHING EQUIPMENT with IPCO Lintoff G-36

IPCO LINTOFF G-36 treats the water in central station washers so that lint and dirt do not stick together or adhere to the metal of the eliminator plates. Therefore, washers treated with IPCO LINTOFF G-36 stay free of sticking lint.

IPCO Lintoff G-36 INSURES:

- Fewer Shut Downs for Washing
- Less Difficulty in Washing
- Preservation of Metal Parts
- Relief From Slime Condition
- More Efficient Operation of Equipment

INDUSTRIAL PRODUCTS CO.
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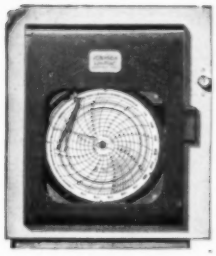
JOHNSON AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL

For all Types of Heating, Ventilating and Air Conditioning in Textile Mills

T-400 Room Thermostat

T-400 Room Thermostat

V-211 Three-Way Mixing Valve (Rubber Diaphragm)



H-412 Aspirating Cabinet

H-1600 Electronic Humidostat

THERMOSTATS: Johnson Room Thermostats are furnished in a wide selection of adjusting features allowing accessible, key or closed adjustment of the temperatures to be maintained. All room thermostats are equipped with highly sensitive bimetallic temperature sensing elements.

Immersion, insertion and remote bulb thermostats are provided for the control of temperatures in ducts, tanks and enclosed chambers. Remote bulb thermostats have liquid-filled capillary systems with various styles of bulbs. Standard capillary length is 8 ft., with 15, 25, 35 and 50 ft. lengths available on special order.

HUMIDOSTATS: Johnson humidity control instruments are affected by the amount of moisture in the air and maintain any desired relative humidity. Available in room and insertion patterns with bi-wood, bow-wood, wood cylinder, horn or animal membrane elements. The most sensitive control within 1% relative humidity, even as high as 95% at 200 F. Johnson Humidostats control all types of humidifiers.

HUMIDIFIERS: Johnson "steam grid" type (perforated pipe supplied with low pressure steam) or pan type (copper evaporating pan, brass heating coil and float control) are dependable humidifiers for central fan systems.

VALVES: Simple and rugged. Diaphragms of special molded rubber, resistant to age and oxidation, operate the valve stems against the pressure of dependable springs. No complicated moving parts. Made in all standard sizes and patterns. Normally open or normally closed. Also, three-way mixing and by-pass valves. For steam, water, other liquids and gases. Where maximum power is required for repositioning at the slightest demand of controlling instruments, Johnson molded rubber diaphragm valves are fitted with Johnson's dependable Pilot Positioner, for smooth proportional operation, independent of friction and pressure variations.

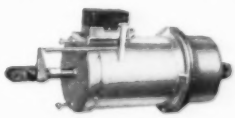
ASPIRATING CABINETS: Cabinets are equipped with many combinations of controlling and auxiliary devices which are required to provide accurate control of temperature and humidity. Cabinets, provided with blowers to insure positive circulation of air over the controller elements, protect the controllers from dust, lint and unauthorized tampering. Air gauges are provided in the air connections to permit checking the functioning of the controllers at all times. An 8" recorder keeps an accurate record of temperature and humidity at all times.

ELECTRONIC HUMIDOSTAT: Johnson Electronic Humidostats are highly sensitive electronic controllers designed for the accurate control of relative humidity. Available in two-position or proportional action models. Also available with pneumatic thermostat and solenoid air valve mounted in an Aspirating Cabinet for pneumatic control systems. Non-organic humidity sensing element of unusual accuracy does not require frequent recalibration.

DAMPERS: Galvanized sheet steel blades in flat iron frames with adequate bracing to form a rigid assembly. Finished in black lacquer. Special corrosion-resisting finishes on order. Monel metal, aluminum, copper, rust-resisting steel, etc. Brass pins in steel bearings or ball bearings. Angle iron frames optional.

DAMPER OPERATORS: Similar in principle to valves. Seamless metal or specially molded rubber diaphragm operates damper through suitable linkage. Various types of brackets. Distinctive Johnson "Piston-type" damper operators afford long travel at full power, a feature not found in other such controllers. With or without pilot mechanisms, as described above under "VALVES".

D-251 Piston Damper Operator



D-251 Piston Damper Operator with D-265 Pilot Positioner

T-800 Capillary Thermostat

T-901 Capillary Submaster Thermostat

V-530 Precision Pilot Positioner Applied to Valve

D-225 Proportioning Louver Damper

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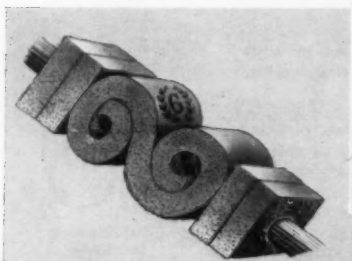
DIRECT BRANCH OFFICES IN PRINCIPAL CITIES

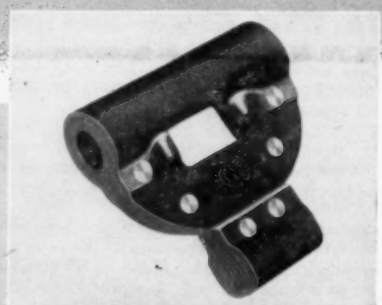
MANUFACTURE • APPLICATION • INSTALLATION • SINCE 1885

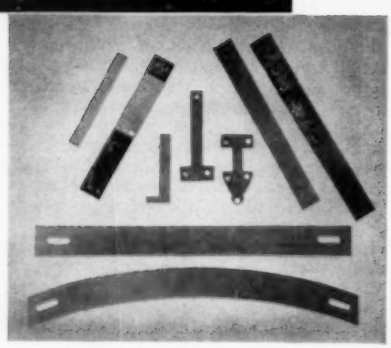
It's a 92 year old FACT...

"YOU CAN DEPEND ON GARLAND PRODUCTS!"

92 years the Garland Manufacturing Company has been providing dependable products for the textile industry. And Garland has kept pace with textile progress. Today, Garland manufactures more and better textile products. Yes, "YOU CAN DEPEND ON GARLAND PRODUCTS!" —*yesterday, today* and *tomorrow.*







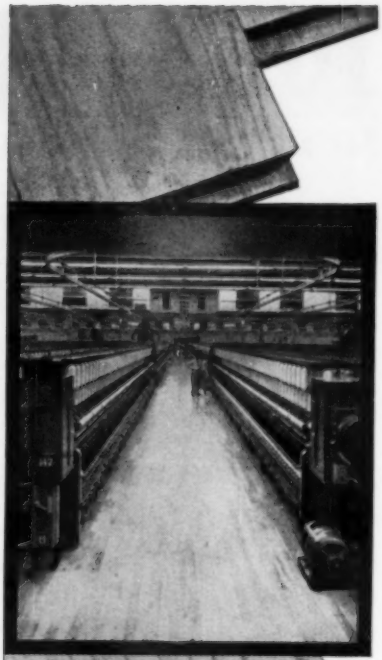
Garland manufactures genuine water Buffalo rawhide (the toughest material, anywhere) Pickers . . . Sponge Leather Bunters . . . Rod Lubricant and Easy Applicator . . Leather Products including check straps, picker checks, hold up straps, etc. . . . Garland also is well known in textiles and other industries for a complete line of hammers and mallets with both rawhide and nylon faces.

Write for catalog and prices.

Garland MANUFACTURING CO.

Manufacturers of RAWHIDE LOOM PICKERS • SPONGE LEATHER BUNTERS • RAWHIDE HAMMERS AND MALLETS

50 WATER STREET • SACO • MAINE



easy!

–on the feet
–on the eyes
–on the budget

The **MFMA** brand on the underside of genuine Northern Hard Maple is your guarantee. You *know* your floor will fight scars and dents for years — won't splinter — will brush clean easily, be easy to finish or refinish. It'll create no dust, harbor no dirt, and *feel wonderful under foot.* Write for 1958 list of **MFMA**-approved floor finishing products. See Sweet's (Arch. 13j-MA) for full data.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
Suite 592, Pure Oil Bldg., 35 E. Wacker Drive
Chicago 1, Illinois

NORTHERN HARD MAPLE

the finest floor that grows

BEECH and BIRCH

Protect your plant from thieves and vandals with USS Cyclone Fence

Cyclone* Fence is especially designed for use around all types of manufacturing plants —to discourage vandals, keep out trespassers and to regulate entrance and exit traffic at authorized gates. Cyclone Fence is available in several different heights, with or without barbed wire, to meet your individual requirements.

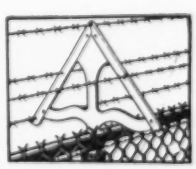
USS* Cyclone is well-built fence, designed to give years of trouble-free, low-maintenance service. Posts and top rails are heavy and rigid. Gates won't drag. The chain link fabric is woven from heavy steel wire, galvanized *after* weaving for maximum resistance to rust and corrosion.

FREE Advice available from our trained technicians. Just get in touch with the nearest Cyclone Sales Offices. And for free literature describing all types of Cyclone Fence and Gates, write to Cyclone Fence, Dept. W-78, Rockefeller Building, Cleveland 13, Ohio.

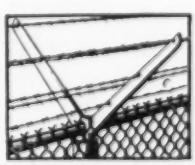
USS and Cyclone are registered trademarks

Cyclone Safeguard Fence, a neat, good-looking fence for use where the maximum amount of protection is not necessary.

Cyclone Invincible Fence, with its three strands of barbed wire assures a greater degree of trespasser exclusion.



Cyclone Non-Climbable Fence has five strands of barbed wire and gives the greatest possible security against thieves and vandals.



Cyclone Victory Fence is very much like Non-Climbable Fence except that the extension arms are reversed and carry 6 strand of wire.

Cyclone Fence Dept.
American Steel & Wire
Division of

USS United States Steel

Waukegan, Ill. · Sales Offices Coast-to-Coast · United States Steel Export Company, Distributors Abroad

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Woolen and worsted textile machinery

A complete line of accessories, supplies and maintenance parts.

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Ceiling Condensers — Heavy Shredders
Automatic Oilers — Rag Pickers
Fearnaught Pickers — Mixing Pickers
Wool and Rayon Openers — Burr Pickers

Pickers for every purpose

CARD CLOTHING
GARNETT WIRE
NAPPER CLOTHING
CONDENSER TAPES
RUBB APRONS

★ CARDING MACHINERY for

Woolen, Worsted, Asbestos, Rayon, Felt and Waste
Bramwell Feeders Sample Cards Garnett Breasts
Tape Condensers, *Single and Double Apron,* Balling Heads, Grids or Screens, Can Coilers, Machines for Mounting Card Clothing, Doffer Combs, Waste End Conveyors, Card Grinders, Center-Draw Broad Band Intermediate Feeds, Burr Removers.

The skillful integration of Davis & Furber methods, materials and machinery with your mill results in "CO-ORDINATED PRODUCTION." It means increased profits for you. Ask us for information on this. Send for copy of the D&F News to help with your planning.

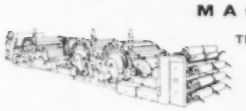
★ SPINNING AND YARN MACHINERY

Spinning Frames for Wool, Shoddy, Cotton, Rayon and Mixtures, Spinning Frames for Carpet Yarns, Standard Type and Large Package Mules, High Speed Warp Spoolers, Warp Dressing Frames, Beamers, Warp Compressors, High Speed Warping Systems
Reels, *Pin or Pinless* • Dresser Creels • Skein Reels

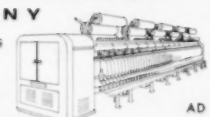
★ FINISHING MACHINERY

Single and Double Acting Nappers for Wool, Rayon, Worsted or Cotton Goods, Woven or Knitted.
14, 20, 24, 30 and 36 Rolls
Napper Grinders Chinchilla Machines

DAVIS & FURBER
MACHINE COMPANY



TEXTILE MACHINERY DESIGNERS AND MANUFACTURERS
North Andover, Mass.
Charlotte, North Carolina



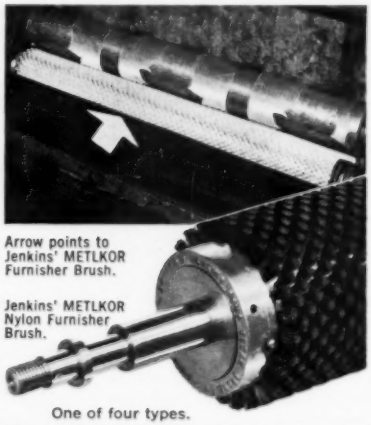
AD 12-3

CARDS • SPINNING FRAMES • PREPARATORY MACHINERY • WARP DRESSING MACHINERY • FINISHING MACHINERY MACHINERY MODERNIZATION • ACCESSORIES, SUPPLIES, CARD & NAPPER CLOTHING, GARNET WIRE, TAPES & APRONS SPARE PARTS • TECHNICAL SERVICE & CONSULTATION

PERFECT PRINTING TEAM

METLKOR BRUSH JENKINS — RICE BARTON

Jenkins' METLKOR Furnisher Brushes, developed for Rice Barton printing machines, perform to the highest levels of reliability. They supply color efficiently and clean thoroughly the deepest or shallowest engravings.



Arrow points to Jenkins' METLKOR Furnisher Brush.

Jenkins' METLKOR Nylon Furnisher Brush.

One of four types.

Jake Nieman, Boss Printer of Manhattan Print Works Division of Waldrich Co., Passaic, N. J., one of the first to try these superior brushes, says, "We have been using Jenkins' METLKOR Furnisher Brushes in our Rice Barton printing machines for nearly 20 years. They measure up to the high standards we have set for the quality work we do."

In addition to a complete line of brushes for printers, Jenkins' also makes brushes for: Shears, Carbonizers, Singers, Tenter Frames and all other Textile Wet and Dry Finishing Processes.

Specify Jenkins' METLKOR
the original . . . the best *Metal Core* brush

METLKOR®
CYLINDER BRUSHES
and **LIFEWOOD®** WOOD BACKED BRUSHES

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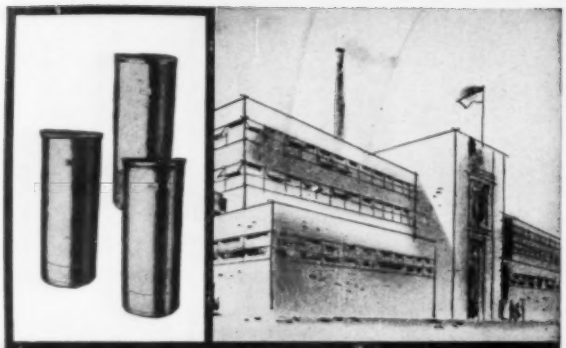
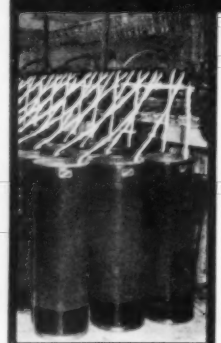


Modern mill practice demands KENNETT RECEPTACLES



The problem of industrial production planning is to have the right thing in the right place at the right time—*in safe, steady, automatic flow.*

To solve this problem, textile men are turning in increasing numbers to Kennett as the industry standard for receptacles and prime movers. Here are a few of the many good reasons why:

Full line—There's a Kennett Receptacle for every textile handling job. Strong and smooth—National Vulcanized Fibre construction gives hard, glass-smooth surfaces that are strong, tough, resilient and durable. Light—but with long life—Kennett receptacles are light, easy to handle, but built for years of hard mill service.

A free copy of our new folder "Materials Handling in Textile Plants" awaits your request. It will help solve *your* problems—write for a copy today. Dept. BB-7

***ask the Kennett man about the great savings possible with larger-diameter seamless roving cans . . . a National exclusive.**

NATIONAL VULCANIZED FIBRE CO.

WILMINGTON 99, DELAWARE

ALSO MANUFACTURERS OF NATIONAL VULCANIZED FIBRE, PHENOLITE LAMINATED PLASTIC, PEERLESS INSULATION, VUL-COT WASTEBASKETS

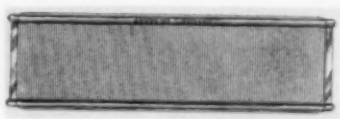
NEW DIMENSIONS IN DESIGN AND SERVICE TO THE TEXTILE INDUSTRY

ANDREWS COMPANY

SERVING THE TEXTILE INDUSTRY

1898 60 YEARS 1958

The Andrews Company assists mills in cutting costs and increasing production with their NEW PATENTED BEADED DENT REED. This costs no more than regular reeds and will not cut your shuttles nor chafe your yarn. Loom stops due to knots and gouts decreased.



PITCH BAND REED
For Cotton, Woolen and Duck weaves

ALL METAL REED
Completely soldered. Manufactured with flat or rounded rib. For Silk, Nylon, Acetates and Plastics. Stainless or Carbon Steel.

COMBS FOR DRAWING-IN COMBS FOR SLASHERS
All metal or pitch band with wooden caps.

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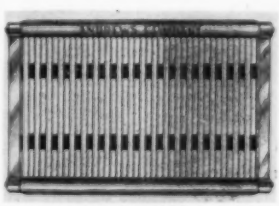
- Leader Wires
- Oval & Semi-Dent Reeds
- Anti-Friction Threadle Roll Bearings
- Ball Thrust Bearings



LEASING REED

Manufacturers of cotton, rayon, and silk loom-reeds, carbon and stainless steel heddle bars, drop wire bars, treadle ball bearings, screw machine products, textile specialties.

HIGHEST AWARD CHARLESTON EXPOSITION

ANDREWS COMPANY

GOLD MEDAL AWARD GREENSBORO EXPOSITION

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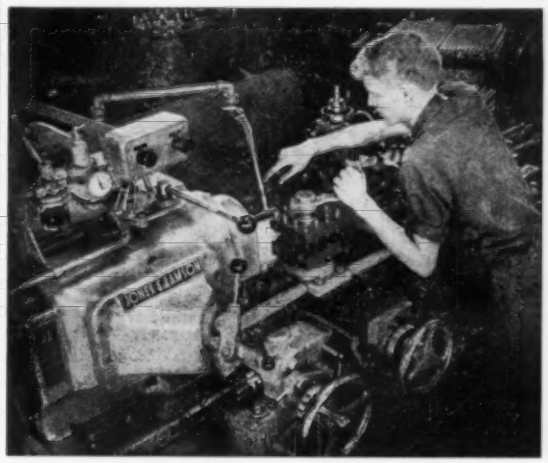
ANDREWS BEARING COMPANY
Precision Anti-Friction
BALL THRUST BEARINGS
Ranging from 3/16" ID to 42" OD

QUALITY WORKMANSHIP WITH PROMPT SERVICE

Our policy of two to three weeks delivery on all Roller, Flyer and Spindle repairs, is our Guaranteed Customer Service.



Manufacturing New Spinning Rolls

A modern plant, fine equipment, experienced personnel and efficient management make it possible for us to guarantee complete satisfaction on:

Repairs to all types of Rolls and Spindles. Also, new Steel Rolls, Card Room Spindles, Fluted Rolls, Lifter Rods, Gears and Trumpets.

OVERHAULING DRAWING A SPECIALTY

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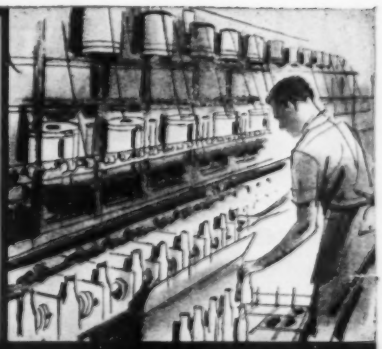
SATISFACTION GUARANTEED

Aluminum Take-Up Bobbin. Hard worker with a long life . . . takes crushing pressure of any yarn.



Lestershire Bobbins by NATIONAL

Wood and Fibre Twister Bobbins—Low cost—long life—for non-steaming use.

Rayon Twister Bobbins—Handle rayon or nylon at high speed, with steaming.

first choice of economy-wise mill men

Can your mill afford a full-time research program? Or even just one man to study nothing but bobbin problems? You won't need either when you use Lestershire Bobbins by National. Our research staff is working continually on your problems—new synthetic yarns, larger "packages," higher speeds—as they develop. You buy assurance when you buy Lestershire — assurance of the right bobbin for almost any spindle speed or yarn in use today.

Lestershire's program of research and development helps you in many ways. Quality control standards we've developed pay off in long, trouble-free bobbin and spindle life. Prices are realistic, too.

For prompt service, get in touch with your nearby National office or representative. In the South it's Odell Mill Supply Co., Greensboro, N. C.; Greenville Textile Supply Co., Greenville, S. C. Or write us at Wilmington, Delaware.

NATIONAL VULCANIZED FIBRE CO.

WILMINGTON 99, DELAWARE

In Canada: National Fibre Company of Canada, Ltd. • Toronto 3

ALSO MANUFACTURERS OF NATIONAL VULCANIZED FIBRE, PHENOLITE LAMINATED PLASTIC, PEERLESS INSULATION, VUL-COT WASTEBASKETS

NEW DIMENSIONS IN DESIGN AND SERVICE TO THE TEXTILE INDUSTRY

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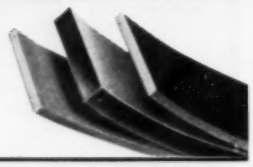
TEXTILE LEATHERS

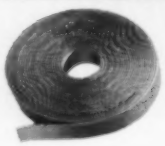
NO-STRETCH NYCOR

The New Revolutionary Flat Belting for power transmission drives. No take-ups, no lost production—ideally suited for Lickerin and Doffer drives.



LEATHER BELTING

Three brands of flat leather belting are made by G&K (Research, Spartan and Heart Oak) for every application in the mill.



LOOM LEATHERS

The famous G&K Orange Line includes the finest leathers for Draper and Crompton & Knowles looms.

BINDER AND BOX PLATE LEATHERS

Perfect boxing is assured by these high quality leathers. Their frictional surface brakes the shuttle evenly to a stop — their smooth edges prevent catching of the finest filaments.

SPINDLE BUMPER STRAPS

This strap is made of two plies of Hairitan® leather with a tightly woven fabric cemented between them and is delivered already formed, mounted for easy installation.

PICKMASTER® PICKERS

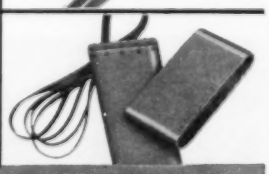
Precision-made of Hairitan® or Oak tannage leather, these pickers absorb repeated impact without shuttle bounce and dissipate heat, preventing hot shuttle spurs

CHECK STRAPS

These straps (endless, straight or curved) provide controlled cushioning action for the picker stick and help it make a smooth shuttle throw continuously without fatigue.

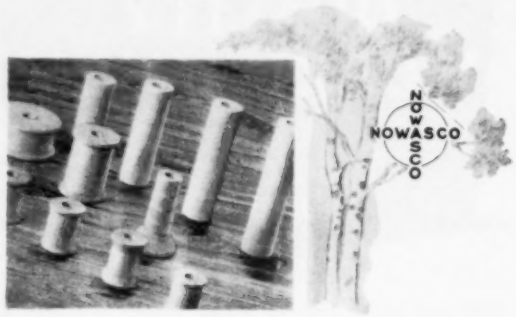
APRONS and TAPES

G&K comb and gill box aprons are extremely pliable, resist heat and have great tensile strength. G&K condenser tapes are glass-smooth, flexible and dead-even .125" thick.



GRATON & KNIGHT Company INC.

WORCESTER 4, MASSACHUSETTS



NORTH WATERFORD SPOOL COMPANY

ESTABLISHED 1918

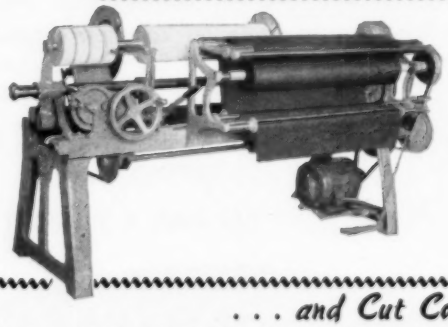
Manufacturers of

WOOD SPOOLS AND CORES

Post Office Box F, North Waterford, Maine

Step Up Production!

UTICA HEAVY DUTY COMBINATION WINDING AND CUTTING MACHINE



. . . and Cut Costs!

- Cuts and winds light, medium, heavy, both straight and bias fabrics . . . has 15 inch diameter knife . . . cuts and rolls up to 12" diameter rolls.
- High speed knife sharpener with 4-way adjustment gives blade clean, sharp edge . . . push button magnetic switch stops and starts machine.
- Has measuring scale and yardage counter . . . can furnish automatic spacer for continuous production.
- Very heavily constructed . . . precision-made for long, trouble-free performance . . . well-guarded . . . made in 45", 55", and 65" widths.

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UTICA NOVELTY AND MILL SPECIALTY CO.

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Builders of Textile Machines Since 1903

Call MILTON for dependable BEAMS

Light Metal featuring continuous welded construction

NYLON & RUBBER YARN BEAMS

FORGED HEADS
RIGID BARRELS

Forged heat-treated aluminum alloy heads and extra heavy wall barrels designed to withstand extreme pressures of monofilament; fine denier; low-turn nylon; and rubber yarns. 13¾" and 21" diameter heads.

SECTION BEAMS

Adaptable to all makes of warpers. Cast aluminum alloy heads and extruded aluminum barrels cannot shrink, swell, splinter or distort.

STEEL BARREL
WARP BEAMS
for BROAD, NARROW FABRIC, RIBBON, VELVET AND CARPET LOOMS

BROADLOOM BEAMS

for C & K and Draper Looms

Shown above is Milton's stud construction (also made with cast iron, hubs).

RIBBON LOOM BEAMS

Adjustable head with fixed shaft, or fixed head with removable shaft.

WRITE FOR FREE BULLETINS

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INCORPORATED
DESIGNERS • ENGINEERS • MANUFACTURERS
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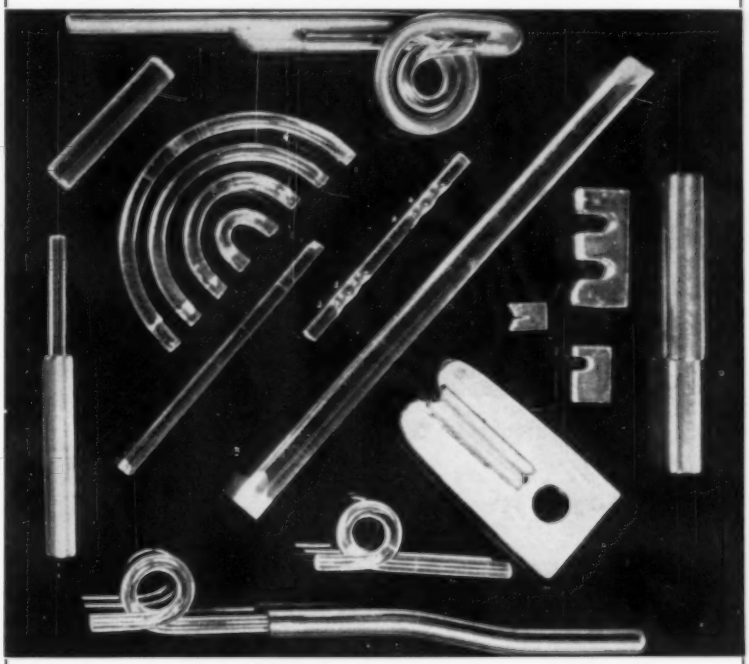

TODAY'S SPEEDS AND ABRASIVE YARNS MAKE SAPPHIRE A MUST

Follow the lead of the synthetic yarn manufacturers who "Try SAPPHIRE First" when wear is the problem. Large and constantly growing SAPPHIRE installations have proven the economy of demanding the best. The extreme hardness and flawless surfaces of SAPPHIRE minimize guide wear, second quality products, and costly maintenance shut-downs.

Design with SAPPHIRE in mind and reap the benefits of top quality guide surfaces at competitive first cost. Utilization of simple SAPPHIRE shapes in combination with other materials can produce economical wear resistant guides with minimum breakage. End your guide problems before they start. Specify SAPPHIRE.

Engineering assistance on your SAPPHIRE guide designs is available without obligation.

* "Linde" Synthetic SAPPHIRE

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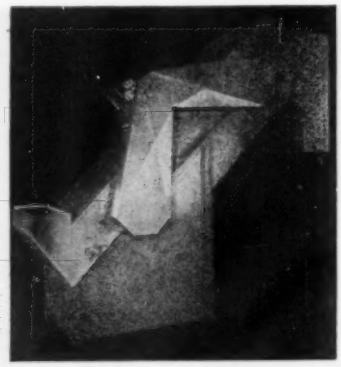
INDUSTRIAL SAPPHIRE CO.
P. O. Box 422
Quakertown, Pennsylvania

Superior

CLEANER

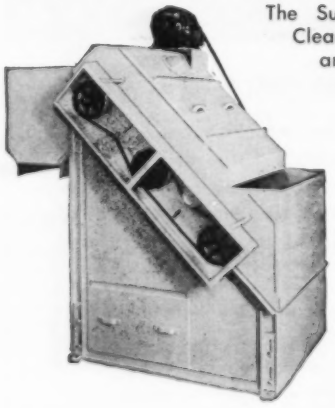
For Cotton and other Fibers



The Superior Cleaner Opens, Cleans, Conveys and Blends Cotton and other Fibers without Rolling, Curling, Nepping, Stringing or Staple Breakage. It removes, through Vibrating Grids, a great percentage of Peppery Trash and other foreign matter that normally passes on through the ordinary cleaning line. It is adaptable to any standard cleaning line.

Superior

PRE OPENER & CLEANER



The Superior Pre Opener & Cleaner completely opens and Pre Cleans the low production as delivered to it by Blending Feeders. It removes much large leaf before it is subjected to a regular cleaning line to be reduced to PEPPERY TRASH. One of the Pre Openers & Cleaners installed to receive from each Blending Feeder of a Blending line, insures light production and maximum efficiency.

Pleasing results for the Superior Cleaner and the Superior Pre Opener & Cleaner is guaranteed. If you feel that PEPPERY TRASH or other foreign matter in your stock is causing excess trouble please contact us for more complete data.

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ENGINEERS • LICENSEES • MANUFACTURERS

ATLANTA GEORGIA

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PATENTED ®

NARROW FABRIC QUILLS

The nylon-aluminum combination that creates the strongest, longest-wearing quill ever presented to the industry.

CUTAWAY SECTION

OUTSIDE LENGTHS	FROM 1⅝" to 5⅞"
FLANGED DIAMETERS	FROM 1 3/16" to 1 13/16"
HUB OR BARREL DIAMETERS	5/16" - ⅜" - 7/16" ½" - ⅝"
BORE DIAMETERS	.125" - .136" - .187"
FLANGE THICKNESS	FROM .109" TO .312" IN VARIED CONTOURS.

- IVORY SMOOTH RIM FINISH
- DIMENSIONALLY UNIFORM
- DIMENSIONALLY STABLE
- SNAG RESISTANT
- IMPACT RESISTANT
- WEAR RESISTANT
- NICK RESISTANT
- CRACK RESISTANT
- ABRASION RESISTANT
- CORROSION RESISTANT
- MINIMUM RUN-OUT

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REVOLVING JOINTS

REQUIRE NO FLEXIBLE HOSE FOR MOUNTING

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4. TEFLON Stationary Seal
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8. No Lubrication
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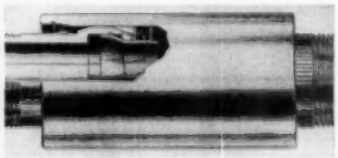
10. Easily Repaired (Only Seven Parts)

YX—SELF ALIGNING ELIMINATES BROKEN SYPHONS

SIZES ½" TO 6" INC.



EXPANSION JOINTS HAVE NO HIGHLY STRESSED METAL BELLOWS

Air • Steam • Hydraulic

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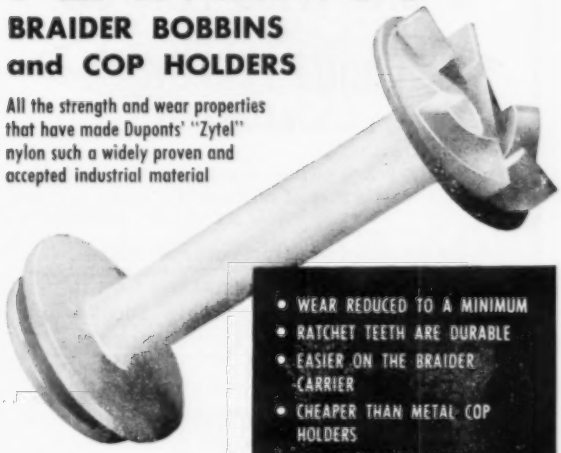
BRAIDER BOBBINS and COP HOLDERS

All the strength and wear properties that have made Duponts' "Zytel" nylon such a widely proven and accepted industrial material



- WEAR REDUCED TO A MINIMUM
- RATCHET TEETH ARE DURABLE
- EASIER ON THE BRAIDER CARRIER
- CHEAPER THAN METAL COP HOLDERS
- CAN BE CLEANED WITH A DETERGENT
- RESISTANT TO CRUSHING
- SELF LUBRICATING

SIZES FOR NOS. 1-2-3. N. E. BUTT CARRIERS AND MANY SPECIAL SIZES. SEND SAMPLE FOR QUOTATION.

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REVOLVING CYLINDER BRUSH

For Carbonizing or other Acid or Wet Work Stainless Steel Journals, Rubber-Covered Body, Acid-Proof Nylon Bristles. Made Especially for the Textile Industry, in any size, to your specifications.

Brush Rolls, solid wood body, wood lag or aluminum lag, Comber Rolls (New or Refilled), Dabbing Brushes, Dryer or Tenter Wheels, Top Flat Card Rolls, Thread Dresser Lags, Treadle and Crosser Brushes, Goat Hair Nipper Brushes, Loom and Comber Dusters, Doffing, Roller Neck and Clearer Brushes

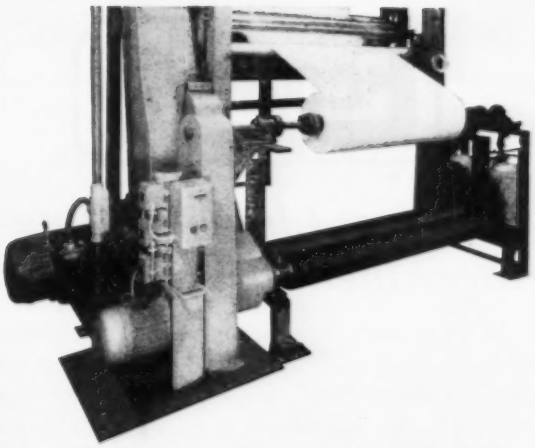
COMPLETE LINE OF MAINTENANCE BRUSHES

Specialists in the Manufacture of Brushes For All Types of Industry

MASON-WORCESTER BRUSH CO.

WORCESTER, MASS.

38 Austin St. Established 1849



"Best for the job, without a doubt"

That's Milam Electric's Opinion of Its Hobbs-Alquist Winding Unit

Milam Electric Manufacturing Co. of Providence, R. I. is one of only 8 companies in the United States which supply the electrical industry with laminated insulation for motors, transformers and generators. Its laminations include films, foils and papers ranging from thin plastic film to heavy paper board. The pressure sensitive coatings of many of the laminations require that constant winding tension be maintained at various degrees of hardness in the master web.

Milam reports that its Hobbs-Alquist winder is "best for the job, without a doubt". Controlled tension on this machine can be maintained in a roll build-up as high as 10 to 1. Torque is sensed automatically as the rewound roll builds up and the speed of the motor is automatically decreased in direct proportion. A uniformly high quality of rewound material results.

Other advantages of the Hobbs-Alquist winder are savings in labor, floor space, maintenance and initial investment and greater cleanliness. This machine uses a 3 phase squirrel cage A.C. motor, flange mounted to a gear reducer. It can be connected *directly* to the rewind shaft; is entirely independent of the main machine drive. Just plug it into your present 3 phase power outlet — no transformers or converters. Then set a knob for the desired tension and walk away.

Get ALL the facts about Hobbs-Alquist winders. Use coupon to send for full information. No obligations, of course.

HOBBS MANUFACTURING CO.
EST. 1888
60 G Salisbury St., Worcester 5, Mass.

Send full information on Hobbs-Alquist Winder

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Company .....

Street & No. .....

City ..... State .....

H5-H

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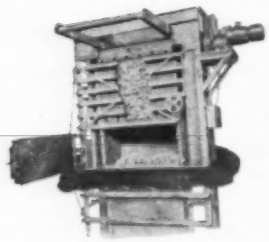
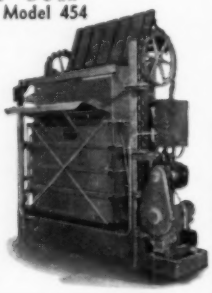
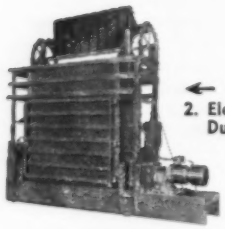
Here are a few models of the overall Economy line. Write for complete bulletin.



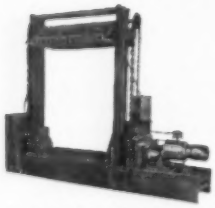
← 1. Electric Multiple Compression Up-stroke Model 127

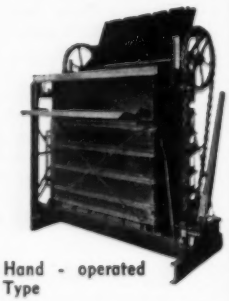
3. Electric Down-Stroke Model 454





← 2. Electric Heavy Duty Model 654





5. Hand - operated Type

4. Open Type Model 81

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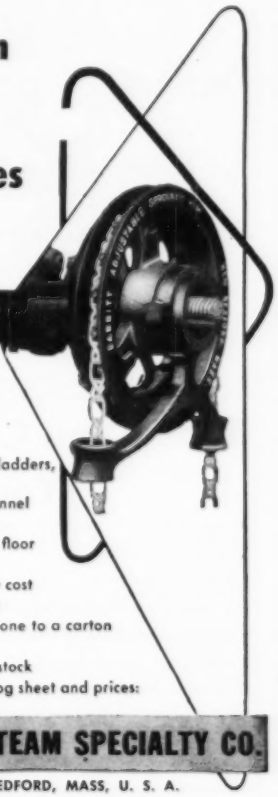

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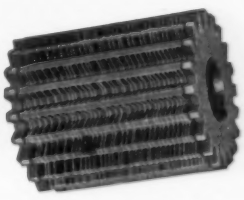

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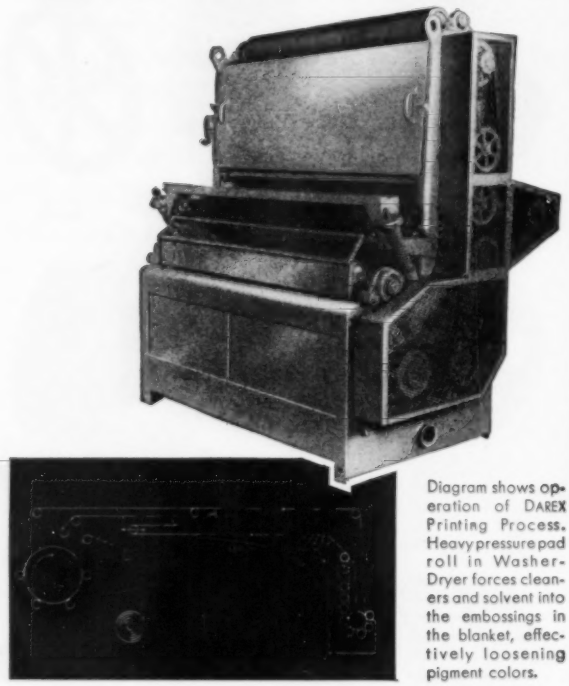

Diagram shows operation of DAREX Printing Process. Heavy pressure pad roll in Washer-Dryer forces cleaners and solvent into the embossings in the blanket, effectively loosening pigment colors.

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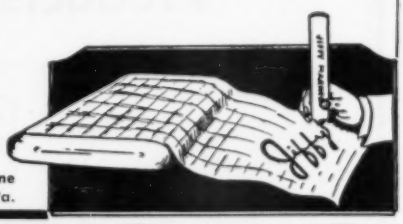

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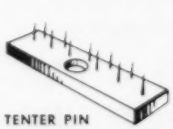

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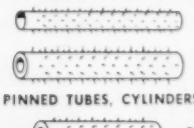

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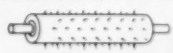

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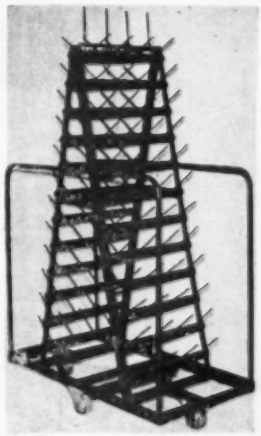

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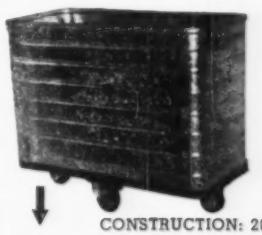
CAPACITY: made to customers specifications to carry size and quantity of bobbins desired.

CONSTRUCTION: Angle iron base and A frame. Cold rolled steel pins, pipe handles, and guard rail.

Electrically welded throughout (except casters) for strength and rigidity.

Ball bearing pressed steel casters are bolted onto base.

FINISH: Painted Saco-Lowell blue-gray.



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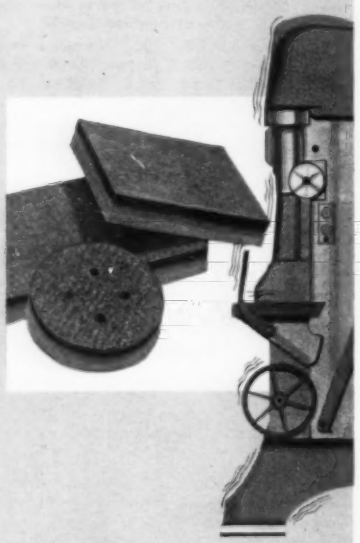

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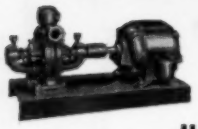

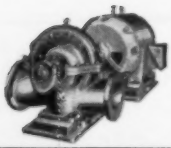

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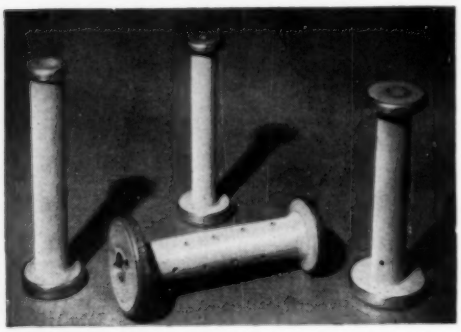

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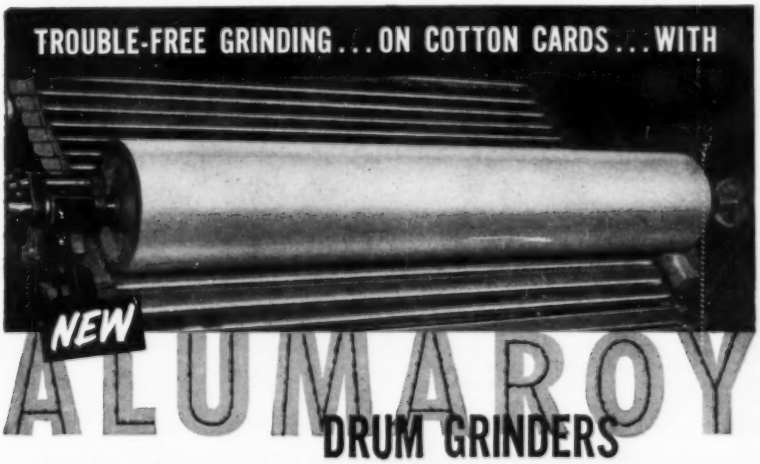

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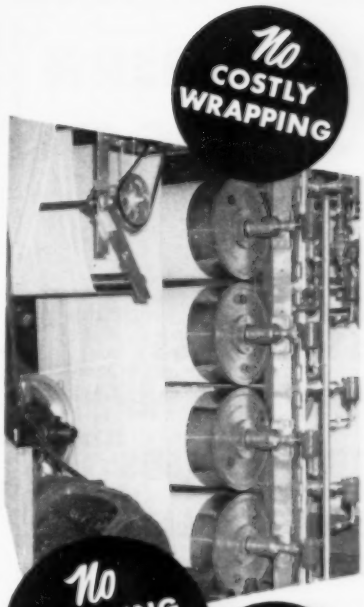

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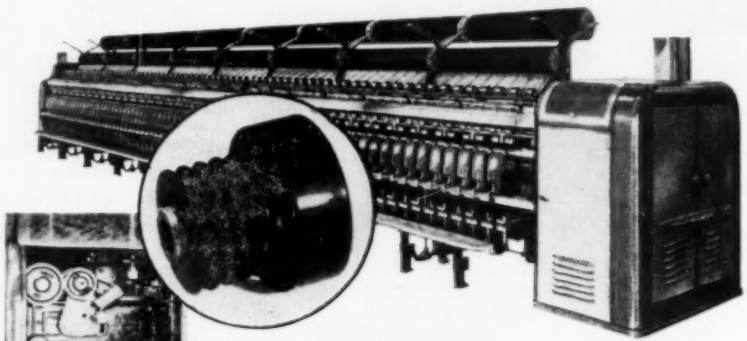
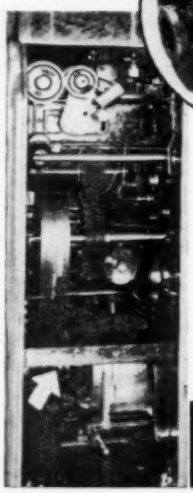
MERCURY CLUTCH SELECTED STANDARD EQUIPMENT ON WOOL SPINNING FRAMES





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Style No.	Standard Sizes L. W. D. Inside Dimensions
TM 8	32 x 22 x 24
TM 10	40 x 22 x 24
TM 12	46 x 22 x 24
TM 15	46 x 28 x 24
TM 18	46 x 28 x 30

Special containers engineered to fit your requirements.

SAVE with the right SHUTTLE FUR

- **FREE BULLETIN SHOWS HOW to SAVE on SHUTTLE FUR**
  For the best weaving results—give us a trial on your shuttle requirements.
- **FREE SAMPLES OF SHUTTLE FUR**
  All types of shuttle furs for textile mills in any width or grade. Also whole hides from Australian, Brown and Gray Opossum. Sheepskins, Yarn Pads, Hides and Strips also available.
- **WRITE TODAY FOR PRICES AND SAMPLES**

COMPLETE LINE OF FIRST AID SUPPLIES,
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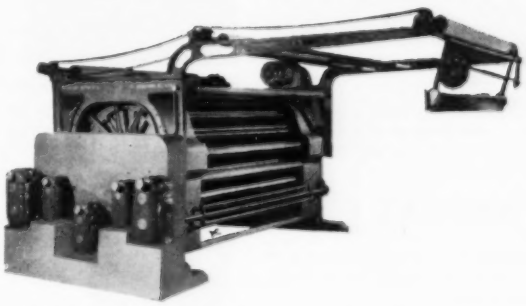
NEW ENGLAND REPRESENTATIVE:
THOMAS R. O'NEIL, P. O. Box 11, Beverly, Mass.

A Complete Line Of High Speed Napping Machines



36 ROLL High Speed Double-Action Napping Machine
30 ROLL High Speed Double-Action Napping Machine
24 ROLL High Speed Double-Action Napping Machine
20 ROLL Single or Double-Action Napping Machine

Special Machinery for Knitted Fabrics

Our Representatives are well qualified in the finishing of all types of fabrics.

WOONSOCKET NAPPING MACHINERY CO.

WOONSOCKET, RHODE ISLAND, U. S. A.

"Builders of the World's Best Napping Machines"

Serving Since 1888

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OPENING AND CARDING
Dust Collector Bags, Card stripper belts

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Endless ermen clearers, Dampening wicks, Clearer Cloth, Endless box and pin clearers, Plush, Friction washers, Sheepskin creel pads.

WARPING AND SLASHING
Warper drum felt, Slasher friction disks, Slasher Cloth, Slasher jackets, Slasher yarn.

WEAVING
Race Plate Felt, Race Plate Corduroy, Pressure roll felt, Sheepskin strips.

PRINTING
Steaming blankets, print roll lapping, felt inner blanket, Sieve cloths, washer roll blankets.

FINISHING
Shearing machine jackets, Compressive shrinkage blankets both Wool and Rubber, Decating aprons-acid resistant, Asbestos and cotton decating drum covers.

MISCELLANEOUS
Wide specialty fabrics cotton, wool and synthetic.

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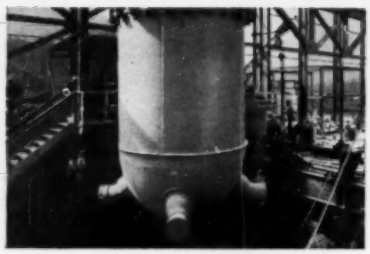
Drake 3-5974

B. C. Yates
Post Office Box 3644—Park Place Branch
Greenville, South Carolina
Cedar 2-0807

YOUR FUTURE IS GREAT IN A GROWING AMERICA

ELECTRONICS

Electronics is one of our fastest growing industries. By 1965 there will be thousands of new needs and new jobs.

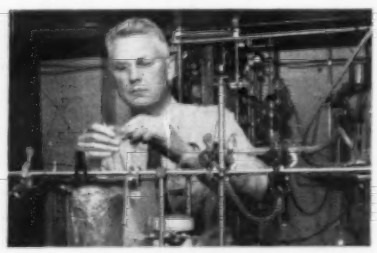


NUCLEAR ENERGY

Nuclear energy is now supplying power for ships and electric plants. Future possibilities are virtually unlimited.

HEALTH

Ever-increasing opportunities in research, development and production. In the field of antibiotics 50% more workers will be required.



CHEMICALS

Today there are more than 800,000 workers in chemicals and related industries. By 1970, there will be *twice* as many!

COMMUNICATIONS

As our nation grows, the demands made upon communications grow proportionately. Thousands more needs, more jobs.

EDUCATION

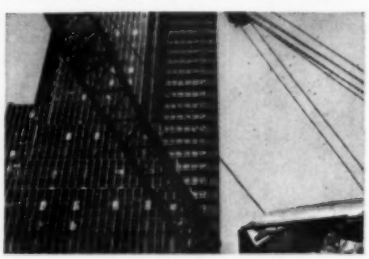
The giant school-building program now beginning will offer new jobs to many thousands of construction workers.

TRANSPORTATION

Our growing population demands constantly increasing mobility. Result: thousands of new opportunities, new jobs in the coming Jet Age.

FOODS

The trend is to labor-saving, ready-to-eat packaged foods. This new phase of an old industry will need thousands more workers.



CONSTRUCTION

3 million workers will benefit from new highway and construction programs—and even more workers will be needed soon.

7 BIG REASONS FOR CONFIDENCE IN AMERICA'S FUTURE

1. MORE PEOPLE—Four million babies yearly. U. S. population has *doubled* in last 50 years! And our prosperity curve has always followed our population curve.

2. MORE JOBS—Though employment in some areas has fallen off, there are *15 million* more jobs than in 1939—and there will be *22 million more* in 1975 than today.

3. MORE INCOME—Family income after taxes is at an all-time high of $5300—is expected to pass $7000 by 1975.

4. MORE PRODUCTION—U. S. production *doubles* every 20 years. We will require millions more people to make, sell and distribute our products.

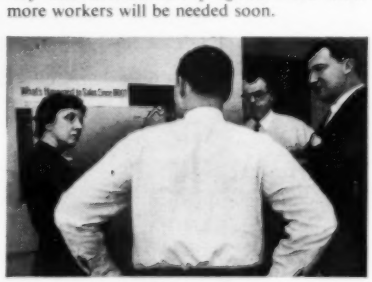
5. MORE SAVINGS—Individual savings are at highest level ever—*$340 billion*—a record amount that is now available for spending.

6. MORE RESEARCH—*$10 billion* spent each year will pay off in more jobs, better living, whole new industries.

7. MORE NEEDS—In the next few years we will need more than *$500 billion* worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

* * *

Add them up and you have the makings of another big upswing. Wise planners, builders and buyers will act *now* to get ready for it.



MARKETING

Marketing includes sales, consumer research, product and package design, advertising and public relations. All need new skills every year—and *many thousands* of new workers!

FREE! Send for this new illustrated booklet, "Your Great Future in a Growing America." Drop a postcard to: ADVERTISING COUNCIL, Box 10, Midtown Station, New York 18, N.Y.

CHEMICALS and DYESTUFFS

Wyandotte products for "wet processors"

Look to Wyandotte for your dependable supply of chemical raw materials. In addition to the high-grade chemical products described on these pages, you will benefit from four important Wyandotte service groups:

★ Technical Service

At Wyandotte, technical service is an integrated part of our overall operation. Our representatives work closely with you on the use and handling of our chemicals . . . help you create new products, improve existing ones, develop new applications and procedures.

CAUSTIC SODA

Wyandotte Caustic Soda is available as a liquid in 50% and 74% concentrations, and in many anhydrous forms: solid, standard flake, ¼" flake, powder, crystal and Flo-chilled.** Wyandotte's mercury-cell caustic is the highest quality obtainable.

Textile Applications — Major Fields. Kier boiling, scouring, bleaching, mercerizing, dyeing and finishing of cottons . . . steeping cellulose in rayon processes . . . water softening, cleaner, saponifying agent, bleaching agent and pH adjustment for wool, cotton and the synthetics.

Shipping Information. *Freight Classification*: Caustic Soda. All grades of Wyandotte's liquid caustic are shipped in specially lined tank cars, or barges guaranteeing quality protection. All dry forms are shipped in drums, by rail or truck. Distributor stocks are maintained in 69 principal cities.

BICARBONATE OF SODA

Wyandotte Chemicals produces bicarbonate of soda meeting the U.S.P. XIV standards . . . and makes it available in several screen sizes and grades. Thus, Wyandotte furnishes, in carload quantities, the same quality product available on drugstore shelves.

Textile Applications — Major Fields. Buffering agent (pH control), scouring agent and dye bath assistant for wool, cotton, silk and the synthetics . . . also used for water softening.

Shipping Information. *Freight Classification*: Bicarbonate of Soda.
Shipped in bags . . . in boxcars or trucks. Distributor stocks are maintained in over 60 principal cities.

HALANE* (Dichlorodimethylhydantoin)

Wyandotte Halane is an organic chlorine-liberating compound, in powdered form, containing 66% available chlorine. It has unusual storage stability alone or when mixed with certain inorganic salts as sodium tripolyphosphate. Formulations containing Halane, together with low concentrations of selected wetting agents, have shown fine stability. In solution, it releases chlorine at a rate dependent primarily on the pH. Attack on cellulose is substantially less than that of the inorganic hypochlorites.

Textile Applications. Fabric bleaching, wool shrinkproofing, starch conversion, desizing.

Shipping Information. *Freight Classification*: Chemicals NOIBN, powder.
Standard Container — 47-gallon fiber drum, with liner, containing 200 pounds of Halane.

CARBOSE* (Sodium CMC)

The Carbose line of technical-grade, medium- and low-viscosity types of sodium carboxymethylcellulose, has particular application in the textile industry. They are finely ground, light cream-colored powders. Minimum active agent of all grades except VL (ethanol method), 65% . . . Carbose VL has 60% minimum active agent.

CARBOSE I, IM, AND VL

Carbose is finding increased use as a warp sizing agent, provides many advantages over other film-forming materials. Among the advantages are:

1. Desizing . . . Carbose can be removed by two or three hot-water rinses (enzyme action unnecessary).
2. Storage stability . . . Carbose may be stored indefinitely as a powder, and for several days in solution at room temperature.
3. Softer warps . . . Carbose thoroughly sizes the warps without stiffening them, and weaves satisfactorily at lower humidities.
4. Availability . . . price and availability of Carbose do not vary as widely as those of starches and glues with changing economic conditions.
5. Pollution . . . Carbose cuts desizing pollution.
6. Cleaning equipment . . . slasher and auxiliary equipment are easily cleaned due to solubility properties of Carbose.
7. Uniformity . . . Carbose is not subject to the variability in performance encountered in natural products.

Textile Applications — Major Fields. Fiber scouring, printing-paste thickness, warp size preparations, finishing-agent formulation, vat dyeing, latex and resin emulsion stabilization . . . cotton, wool, silk and synthetics.

Shipping Information. Carbose is packed in drums and bags, shipped by rail and truck.

CHLORINE

Long experience in the manufacture of chlorine permits Wyandotte to offer expert technical service to all consumers in handling and utilizing this product most advantageously. Wyandotte's Traffic Department routes shipments efficiently and economically. Thorough examination of every tank car, prior to loading, insures the purity of the product and proper functioning of the outlets and safety valve. All angle valves are removed, tested and reconditioned before every loading.

Textile Applications — Major Fields. Bleaching of cotton and wool, intermediate in dyeing . . . water treatment.

Shipping Information. *Freight Classification*: Chlorine. Available in 16-, 30-, and 55-ton tank cars — all territories. Wyandotte's Chlorine is shipped as a liquid in single-unit tank cars of the sizes noted. General design and fittings are similar. Due to the safe design, rigid inspection and expert maintenance of all Wyandotte tank car equipment, the use of liquid chlorine from single-unit cars is very satisfactory where the volume consumed justifies buying in this type of equipment.

PLURONIC* POLYOLS

These unique 100%-active block-polymers of unusually high molecular weight have excellent nonionic surface-active properties — offer flexibility; an overall balance of desirable

and other textile manufacturers

★ Marketing Research

To anticipate the long-term requirements of the textile industry, we continually survey the textile markets. These surveys help to guide our development and production of new or improved chemical products that best fill your industrial needs.

★ Research & Development

Our scientists are working constantly to improve chemicals for your use, develop new products, and give you practical help with your chemical problems. Any time we can serve you, either in your plant or at our modern research center, just call us.

★ Transportation

Plants at Wyandotte, Michigan, on the Great Lakes, and at Geismar, Louisiana, immediately south of Baton Rouge, make Wyandotte products directly accessible — by water, rail, and highway — to four-fifths of the productive capacity of the U.S. and Canada.

properties; and excellent stability in acids, alkalies, and electrolyte solutions. Available in liquid, paste, or flake form.

Suggested for use in textile applications where excellent dispersing, dye leveling, penetration, detergency, rinsing, and low foam are desired. Some Pluronics, such as F68, have very high cloud points.

Textile Applications — Major Fields. Dye leveling of wool, synthetics, and blends of wool and synthetics.

Shipping Information. *Freight Classification*: Washing compound, liquid (dry).

SODA ASH

One of the leading producers of soda ash, Wyandotte Chemicals offers the product in several grades. Every grade of Wyandotte Soda Ash tests at least 58% sodium oxide.

Textile Applications — Major Fields. Kier boiling, scouring, water softening, emulsifier, casein solvent and alkalinity control of wool, cotton and the synthetics . . . also used as an ingredient in rug cleaners.

Shipping Information. *Freight Classification*: Soda Ash. Wyandotte Soda Ash may be obtained in either bag or bulk, hopper car or boxcar, truck or barge. Distributor stocks are maintained in 68 principal cities.

KREELON* (Sodium Alkylarylsulfonate)

Throughout the textile industry, where economical surface active agents having efficient detergency, wetting, and rinsing properties in hard and soft water are required, Kreelon is highly recommended. Its properties permit its use in either alkaline or acid media . . . in kier boiling. Kreelon assists in the penetration of the caustic liquor and the emulsification and suspension of oils, waxes, proteins and pectoses natural to the fibers. It is also desirable in dye leveling and in bleaching operations.

Kreelon is a surface-active agent designed for use either alone or in combination with alkalies or other additives. Synthetic detergent and wetting agent of the alkylarylsulfonate type, Kreelon is available in low and high active agent forms with 40% and 85% active agents respectively. Retains wetting, emulsifying and detergent properties in acid, alkaline, or neutral solutions . . . and in hard waters. Physical forms — flakes or powder, pH of 1% solution at 25° C., 7.01-8.5.

Textile Applications — Major Fields. Scouring, kier boiling, carbonizing, fulling, degumming of silk filaments, bleaching acid, package dyeing, dye bath assistant for the level dyeing of cotton, wool, silk, linen, and synthetics. Also used in rug and upholstery shampoos . . . as a spotting agent in dry cleaning.

Shipping Information. *Freight Classification*: Washing Compound NOIBN — flake or granular. Kreelon is packed in drums or bags, shipped by rail or truck.

PURECAL* (ppt. $CaCO_3$)

Manufactured by a unique precipitation method, Purecal (Wyandotte's precipitated calcium carbonate) is known for its whiteness, purity and uniformity throughout the chemical process industries. Unlike most precipitated carbonates, Purecal is virtually free from iron, magnesium and alkali salts, as well as abrasive materials . . . all grades of Purecal meet U.S.P. XIV standards.

Textile Applications. Weighting and finishing agent.

Shipping Information. *Freight Classification*: Calcium Carbonate. Shipped in bag or bulk — in boxcars, hopper cars and by truck.

DIETHYLENE GLYCOL

Wyandotte Diethylene Glycol is a clear, water-white liquid, miscible with water. It is odorless and extremely hygroscopic. It has a comparatively low order of toxicity.

Textile Applications. Softening of fibers, hygroscopic conditioning agent, and coupling agent for soluble oils.

Shipping Information. *Freight Classification*: Diethylene Glycol. Shipped in 4,000, 8,000, and 10,000 gallon tank cars; 55 gallon drums.

*REG. U.S. PAT. OFF.
**TRADEMARK

Your inquiries are handled promptly. For full data, prices, shipping information, or technical service . . . call your Wyandotte representative . . . or write:

Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION

Wyandotte Chemicals Corporation, Textile Services Dept. 507A
Wyandotte, Mich. • Baton Rouge, La. • Offices in principal cities

Pacing progress with creative chemistry

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • MURIATIC ACID • HYDROGEN • DRY ICE
GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • CARBOSE® (Sodium CMC) • ETHYLENE OXIDE • ETHYLENE DICHLORIDE • PROPYLENE OXIDE
PROPYLENE DICHLORIDE • POLYPROPYLENE GLYCOL • DICHLORODIMETHYLHYDANTOIN • CHLORINATED SOLVENTS • OTHER ORGANIC AND INORGANIC CHEMICALS

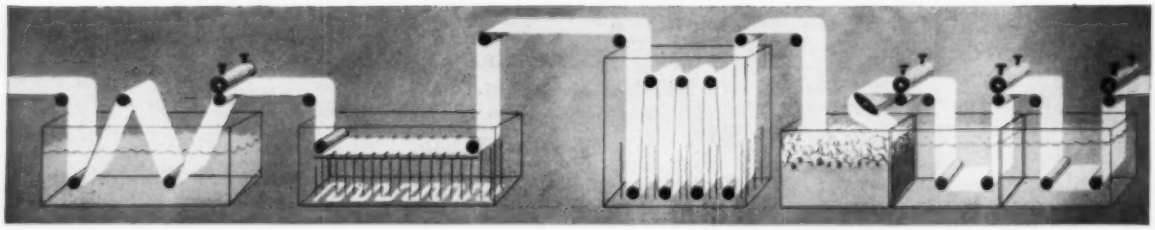
MONSANTO CHEMICAL COMPANY
PLASTICS DIVISION

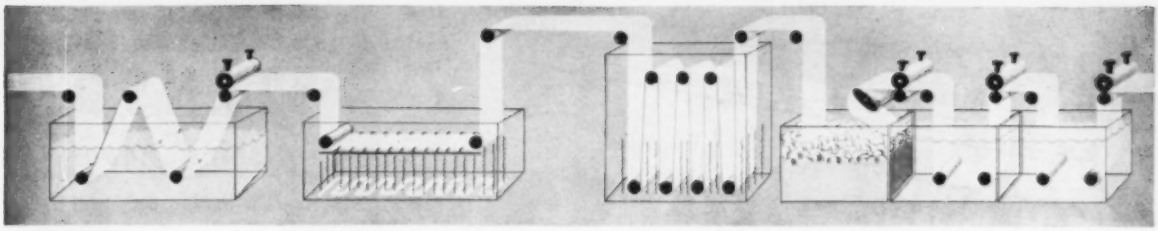
HEADQUARTERS FOR TEXTILE RESINS

FINISHING

	Description	*Application*
RESLOOM® E-50	Cyclical ethylene urea resin, 50% solids. Low viscosity, clear liquid with excellent stability; completely miscible in water at all proportions. *(Tank car, tank truck, 55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	FOR COTTON AND VISCOSE: Dimensional stability and wrinkle recovery, with no stiffness or harshness. Excellent for texturing effects. Durable to laundering. Will not discolor when bleached with chlorine.
RESLOOM® HP	Monomeric melamine resin supplied as a dry, stable, free-flowing powder which is readily soluble in water. (Ask for information on the various Resloom finishes.) *(300-lb. nonreturnable drums, 100-lb. fiber drums, 30-lb. nonreturnable pails.)*	FOR WOOLENS: Provides unusual shrinkage control and washability – builds body, drape and tailorability. FOR RAYON AND SYNTHETICS: Imparts lively hand, wrinkle resistance and washability to rayon and acetate suitings. FOR COTTONS: Provides *durable* crease resistance to dress goods, suitings and other constructions. For general application to all types of fibers and fabrics.
RESLOOM® M-75	Melamine resin 60% solids; clear liquid with a specific gravity of 1.16. Methylated methylol melamine. pH about 10. Infinitely soluble in water. *(Tank car, tank truck, 55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	FOR COTTONS: To impart shrinkage control with minimum "add-on." A smooth finish with crush resistance. Excellent for texturized effects.
RESLOOM® M-80	Methylated methylol melamine resin 80% solids. A heavy, clear liquid with specific gravity close to 1.2. pH about 10. Infinitely soluble in water. *(Tank car, tank truck, 55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	FOR COTTONS: To give excellent crispness and body, wrinkle recovery, and special surface effects. FOR RAYON AND SYNTHETICS: Provides crispness and body, crease resistance, special texturized effects.
RESLOOM® M-85	Modified melamine resin, 80% solids. *(Tank car, tank truck, 55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	FOR COTTONS: Imparts long-lasting wrinkle recovery properties, dimensional stability and hand modification.

®RESLOOM, LYNOX, STYMER, REG. U. S. PAT. OFF.





RESLOOM® U-30	Modified urea formaldehyde, high solids. Viscous syrup with specific gravity of 1.31. Infinitely soluble in water. *(55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	FOR COTTONS: Body and wrinkle resistance when used in combination with Resloom E-50. Excellent durability when formulated for texturized effects. FOR RAYON AND SYNTHETICS: Hand modification when used with other thermosetting resins. Stabilizes viscose, imparting wrinkle recovery.
LYTRON® S	Stable water emulsion of unplasticized polystyrene. *(Tank car, tank truck, 55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	Application to various textile fibers produces a dry, soft, full hand. Can be modified with certain film-forming latices to make box toes for shoe industries.
CATALYST AC SERIES	Four organic materials offering rapid, efficient catalysis of thermosetting resins for textile application, with minimum possibility for amine odor formation. *(Tank car, tank truck, 55-gal. nonreturnable drums, 5-gal. nonreturnable cans.)*	FOR COTTON, RAYON, WOOL AND SYNTHETICS: Used with full range of thermosetting resins for maximum performance, minimum danger of residual odors.

SIZING

STYMER® LF	Vinyl resin; free-flowing, white granular material made soluble with ammonium hydroxide. *(100-lb. fiber drums.)*	FOR LOOM-FINISHED ACETATES: A durable size for solution-dyed yarns. Makes it possible to weave crisp, marketable fabrics (such as taffetas) that do not water-spot or become raggy after dry-cleaning.
STYMER® S	Styrene resin; fine, free-flowing crystalline powder; freely soluble in water. pH of 5% solution 7.5-8.5. *(250-lb. drums, 50-lb. paper bags.)*	FOR RAYON AND SYNTHETICS: A tough, uniform, flexible size for filament acetate and viscose. Provides clean and efficient slashing—no can covers necessary. Won't clog pipes or valves. Provides good weaving—clean fabrics, low seconds. Provides easy size removal.

For further information on any of these chemicals for the textile industry, call your nearest Monsanto sales office, or write

MONSANTO CHEMICAL COMPANY, *Plastics Division*
Springfield 2, Mass.

MONSANTO

WHERE CREATIVE CHEMISTRY WORKS WONDERS FOR YOU

STARCH FACTS

FREE . . . INFORMATIVE TECHNICAL ARTICLES ON TEXTILE STARCHES

During the last several months we have been running a series of articles in Textile World titled "What You Should Know About Starch." These have been written by J. M. Seitz, our Director of Research, and have been published as a service to our friends in the textile industry.

To date these articles have covered such subjects as:

1 THE SIGNIFICANCE OF pH

2 SIGNIFICANCE OF STARCH VISCOSITY

3 WATER SORPTION OF CORN STARCH

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DRUMMOND SOLID SOAP for fulling, scouring, soaping-off. Pure soap, with high titer, low alkali content, no fillers. Also available in flake and powdered form.

DRUMMOND RED OIL SOAP for scouring, emulsifying, cleaning. Excellent detergent, assures high rinsability with low temperatures on sensitive materials in presence of grease and lime.

STANSO POTASH FIG SOAP for scouring, emulsifying, cleaning. Scours raw wool, carpet yarns, works in any temperature range, removes oils, greases.

STANSO SCOURING OIL for scouring woolens, worsteds. In liquid form. Soluble without boiling; constant strength, good detergent. Emulsifies 8 times its own volume of mineral oil.

STANSO TEX OIL general purpose dyeing, penetrating assistant. Gives rapid wetting, good dye leveler. Used to prepare dye paste, or added to dye bath, or as softener in final bath.

STANSO SAVON all-purpose scouring solvent soap. Removes oil, graphite stains from elastic cloth, graphite stains from cotton laces, spots made by solvent dyeing assistants from dacron fabrics.

STANSOCLEN low titer scouring and fulling compound. Has built-in water softeners, provides rapid wetting, good lubricant, emulsifies oils, greases, removes dirt. Good rinsability.

STANSO PAINT & TAR REMOVER for scouring wools and worsteds. Emulsifies paint, tar spots; removes oil, grease stains. Rinses easily in finishing operation.

STANSOLENE wetting, dye-leveling agent for all materials. Used when dyeing cotton and mercerized warps. Gives even dyeing on both packaged goods and thread cones. When used in the rinse bath, eliminates "smudging" on dyed goods.

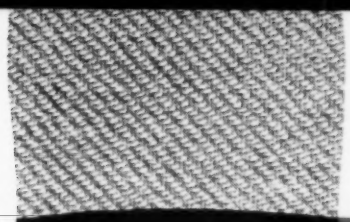
STANSO BLEACHADE wetting agent, penetrant, scouring assistant. For natural and synthetic fibers. Widely used in kier boiling, continuous bleaching operations. For scouring light shades before dyeing. Good dye leveler.

STANSAMINE synthetic detergent. Advantageous in processing, dyeing, finishing of vegetable, animal, synthetic fibers. Safe with delicate fibers, all colors.

VELGLOW finishing agent used during compressive shrinkage process. Gives calendered appearance, maximum shrinkage. Prolongs life of blankets. Efficient lubricant. No discoloration or odor.

Write for complete details

Standard Soap Company Division of
CONCORD CHEMICAL COMPANY INC.
CAMDEN 1, N. J., *Phone:* WOodlawn 6-1526



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dispersed dyes especially suited for polyester fibres

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FAST COLOR SALTS and **BASES**

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azoics for printing

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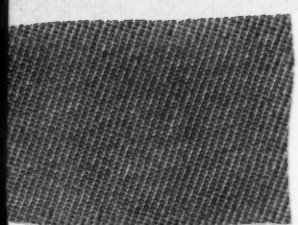
textile auxiliaries



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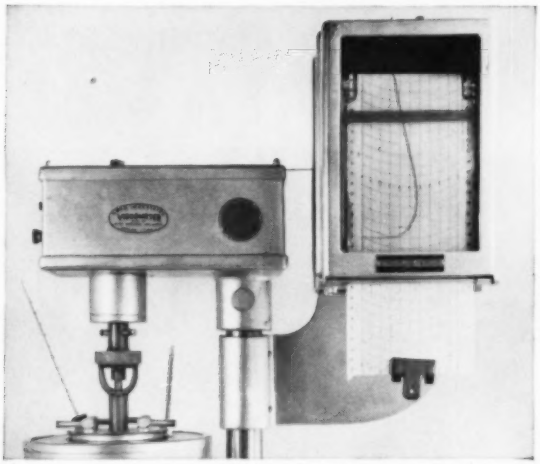
Quick Course in Starch and Dextrin Buying



1. How does it rate on stability? Viscosity stability is a major factor in warp sizing, particularly under high-temperature conditions—and is essential for uniform added weight. This characteristic can be accurately evaluated with a Corn Industries Research Foundation Viscometer.

There are nearly 1000 different corn starches and dextrins on the market. Each one does a job. How can you be sure you're choosing the right one? The correct choice depends on many factors. Here's what to look for—how to compare various characteristics—and

how to select the right starch or dextrin to do the job right!

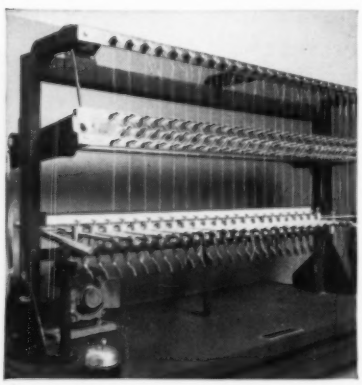
Here are six of the more important tests for selecting the *right* starch or dextrin.

But whether you use these or other methods of testing, remember this: Staley's never-ending research and quality-control laboratories subject every type of starches, gums, dextrins to the most critical tests—not only the tests pictured here, but other demanding tests as well.

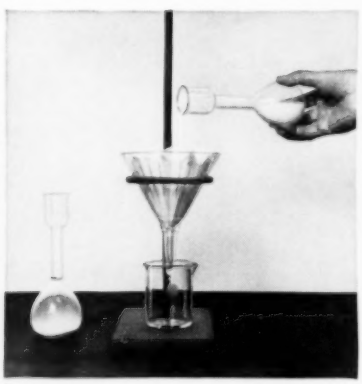
The result? A complete line of custom-made, uniform-quality products for sizing and finishing that meet your most exacting specifications.

2. Is it the right viscosity? Proper size viscosity is important in almost every application and is a key factor in determining add-on for optimum weaving. The Scott Cup is one of the quickest, simplest, most efficient methods of checking viscosity.

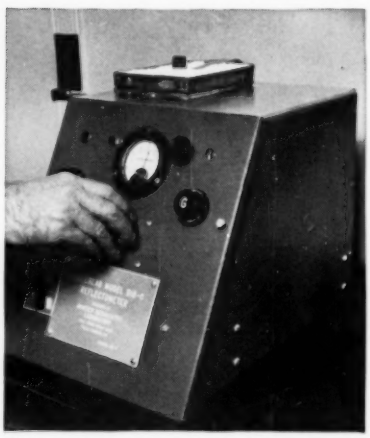
3. What about tensile strength? Important too, is the effect of any treatment on the strength of yarns, fabrics. Tensile strength—ranging from delicate yarns to coarse, durable fabrics—may be determined with the "Instron" Tensile Tester.



4. How does it rate on abrasion resistance? The ability of a sized yarn to resist abrasion during the weaving operation must be carefully evaluated in choosing a starch. The "Walker" Abrader is widely used in this test.



5. Does it have the right solubility? Another important consideration in selecting the *right* dextrin is water solubility. This can be easily determined through a simple analytical procedure utilizing filtration and evaporation.



6. How does it rate on color? Generally, dextrins should be of good whiteness when they are to be used in finishing. Precise determinations of color present in dextrins are possible with the "Hunter" Colorimeter, shown above.

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Sodium Sulfite
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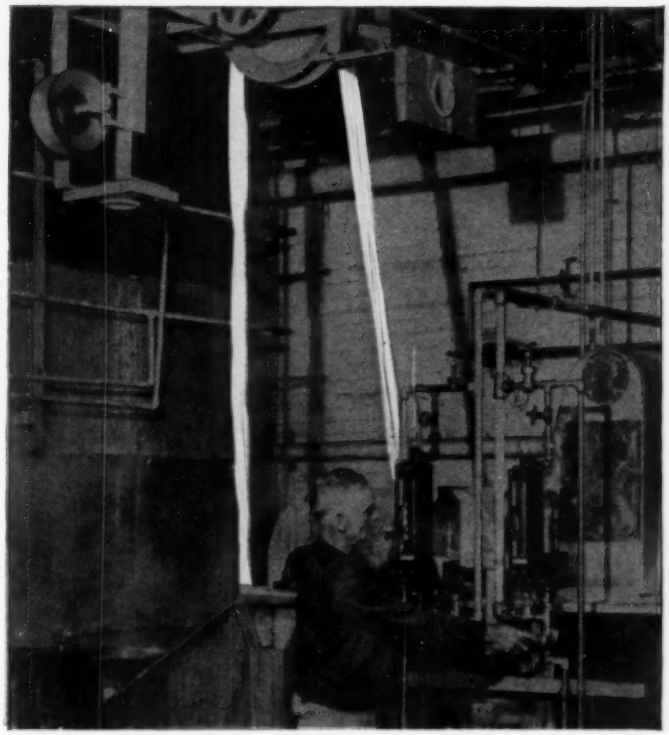
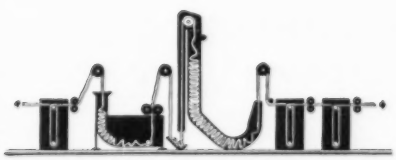
replaces kier process with Du Pont SOLO-MATIC peroxide bleaching process



• Flow of hydrogen peroxide is adjusted in Joanna's new Solo-Matic bleaching unit. Full production was maintained during change-over from caustic-chlorine batch process.

...saves 75% floor space—cuts time and production costs 27%



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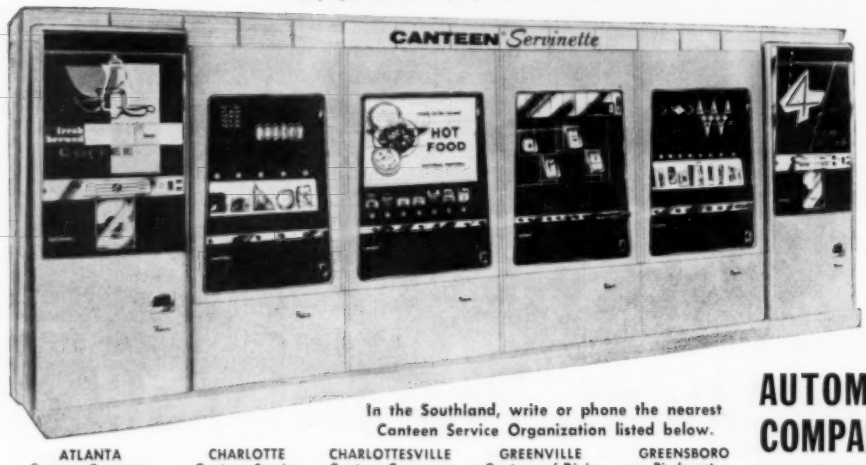

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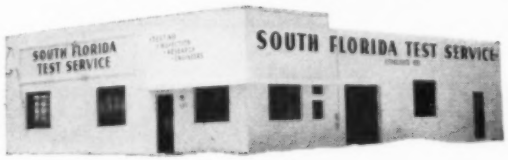

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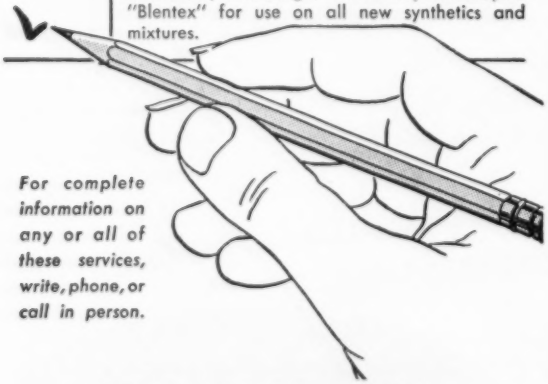

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SEARCHLIGHT ADVERTISERS' INDEX
1958-1959 TEXTILE WORLD FACT FILE ISSUE

Classifications of the products or services offered by the SEARCHLIGHT advertisers in this issue.

1 Aftercoolers
2 Auctioneers & Appraisers
3 Boarding Machines
4 Calanders
5 Card Equipment
6 Combing Equipment
7 Compressors
8 Drawing & Doubling Equipment
9 Dryers & Ovens
10 Dyeing Equipment
11 Dyestuffs
12 Extractors
13 Frames, Roving
14 Frames, Spinning
15 Frames, Tenter
16 Garnetters
17 Inspecting Machines
18 Knitting Machines
19 Looms
20 Mangles
21 Mixing Equipment
22 Nappers
23 Opening & Picking Equipment
24 Printing Machines
25 Shearers
26 Singers
27 Testing & Measuring Equipment
28 Twisters
29 Vacuum Pumps
30 Vats & Kettles
31 Warpers
32 Washers
33 Winders

The numbers after the advertiser's name, indicate the products or services offered by the advertiser.

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30—S&W model KN machines 3¾", 400 needle, with Grab take-down attachment. Lot #36526.

20—S&W Model K's 3¾", 400 needle, looper line on bottom. Lot #36508.

30—S&W Model K's 3½", 300 needle, Lot #35888.

9—S&W Komet Links-Links 3", 168 needle, electric stop motions, serial range 145-16700.

20—S&W Komet Links-Links 3¼", 186 needle, 48 gauge, electric stop motions, serial range 12000-14600.

35—S&W Komet Links-Links 3½", 200 needle, 48 gauge, electric stop motions, serial range 14500-14800.

10—S&W Komet Links-Links 4", 132 needle, 24 gauge, rubber tops, electric stop motions. Lot #34388.

30—S&W HH PW's 3½", 220 needle, 54 gauge, color-in-color.

10—Banner SCOP machines 4", 108 needle, rubber attachments.

13—Banner VIP machines 4", 84 needle, latest model. Lot #36340.

24—Banner Wrap Reverse Plait, 3¾", 120 needle, Lot #31375.

24—Banner Wrap Reverse Plait, 3½", 160 needle, 36 gauge. Lot #36708.

43—Banner 19 step Wraps, 3½", 220 needle, 48 gauge.

4—Reading 66 gauge, 30 section machines Model R-100 Split type, serial range 18200. Lot #36231.

8—Reading 60 gauge, 30 section machines split type, serial range 17200—17400. Lot #35937.

12—Reading 51 gauge, 30 section machines, serial range 13700—15200. Lot #34340.

3—Kalio 60 gauge, 32 section machines, serial range 3100-3200. Lot #35844.

15—Smith-Drum Rotary Dyeing machines, 10 lb. to 300 lbs. capacity.

10—Paddle type dye machines 10 lbs. to 200 lbs. capacity.

6—Paramount Model 29 and Model 31 Preboarding machines, with electric controls.

6—Turbo Model AD 48 and Model D-36 Preboarders.

40—Sotco Loopers, from 8 to 40 point, rebuilt.

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4—Abbott Quill Winders, 100 spdls. pin board—1953

68—C & K C4 Looms, 78", 1949

18—C & K Convert. C4 Looms, 78", 1949

42—C & K Wool W3 Looms, 82", 1946-49

1—V. V. Hyd. 80 Ton Calender, 3 Rolls, 65", 1948

1—Perkins Schreiner Calender, 100 ton, 66",1955

1—Proctor & Schwartz Gas Cure Loop Dryer, 25' long—1952

48—Morrison Hi-Pressure Stainless Dry Cans, 110" 50 lbs. pressure, 1954

36—Morrison Hi-Pressure Stainless Dry Cans, 72", 35 lbs. pressure, 1950

6—V. V. Duplex Stainless Dye Boxes 8' and 12'

1—Hunter 9 Bowl Cont. Washer, 90", 9 pneu. squeezers—1950

1—Morrison Wms. Stainless Washer, 2 compart., 60", 2—5 ton squeezers 1950

1—Nat'l. Loop Dryer, 110", 20 fans, 1947

1—V. V. Finishing Range, w/90' Tenter Frame 62" Nat'l, Housing 75', 14 fans, Verduin Padder, 12 ton, 1947-48

31—Blickman Stainless Steel Enclosed Dye Boxes, 6' and 12', 1942-49

8—Verduin Stainless Enclosed Dye Boxes, 2—12', 6—6'

1—King & Gerber Silk Calender, 3 rolls, 60"

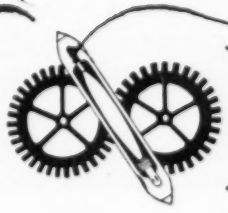
1—R.B.F. Print Machine, 48", 5 color, Can Dryers

1—R.B.F. Print Machine, 50", 10 color, Tower Dryers

1—R.B.F. Print Machine, 52", 12 color Tower Dryers

1—R.B.F. Print Machine, 54", 3 color, Tower Dryers

3—Mulhouse Roller Print Machines, 63", 10 color.



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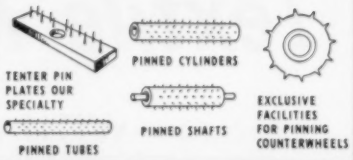

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1—Duesberg 60" Peralta—Year 1948.
5—Duesberg 48" Peraltas.
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45—Spindles Whitin—Schweiter Filling Winders in 15 Spindle Units, Year 1946 and 1947. Each unit complete with motor.
6—Crompton & Knowles W3 Looms Complete.
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1008 CFM 100 psi 150 HP
16-10½x8½ Worth Y3-60-440

1016 CFM 55 psi 17x13 Ing. ES

1055 CFM 110 psi 175 HP
(3) 18-11x12 Ing XRE3-60-440

1184 CFM Vacuum 22x9 Ing.
1270 CFM 40 psi 19x13 Ing. ES-1
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In general, products and services are listed according to their noun, with descriptive word or words following, i.e.: DRIVES—Hydraulic. If a product is peculiar to the textile industry, it is listed under the word or words that represent the accepted terminology of the industry, i.e.: ROVING FRAMES. Wherever necessary, cross references are provided to facilitate convenient use of these listings.

The names of companies that are advertisers in this issue are printed in capital letters, and the page numbers of the advertisements of these companies are included to permit quick and easy reference to more information on the products or services concerned.

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Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc.
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Peerless Color Co., Inc.
VERONA DYESTUFFS DIV. ADV. PG. 177

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National Aniline Div., Allied Chemical Corp.
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Fluoride ..... D
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Goodrich Chemical Co., B. F.
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Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
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Standard Chemical Products, Inc.
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Nyanza Color & Chemical Co., Inc.
Scholler Bros., Inc.

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American Cyanamid Co., Organic Chemicals Div.
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Apex Chemical Co.
Arkansas Co.
Berkshire Color & Chemical Corp.
Borne Chemical Co., Inc.
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Eastman Chemical Products, Inc. ..... A, B
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ANTISEPTICS

Antara Chemicals, Div. of General Aniline & Film Corp.
DOLGE CO., C. B. ADV. PG. 184
EMKAY CHEMICAL CO. ADV. PG. 180
Gallowhur Chemical Corp.
Onyx Oil & Chemical Co.
Putnam Chemical Corp.
Sanitized Sales of America
Scholler Bros., Inc.
Seydel-Woolley & Co.

ANTISLIP COMPOUNDS

Alco Oil & Chemical Co.
Apex Chemical Co.
Arkansas Co.
Armour & Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Colloids, Inc.
Dexter Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
General Latex & Chemical Corp.
Goodrich Chemical Co., B. F.
Hart Products Corp.
Hillyard Chemical Co.
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Mona Industries, Inc.
Monsanto Chemical Co., Organic Chemicals Div.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES, INC. ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Quaker Chemical Products
Scher Bros.
Selig Co.
Standard Chemical Products, Inc.
Steelcote Mfg. Co.
Tennant Co., G. H.
UBS Chemical Co.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
West Chemical Products, Inc.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

ANTISTATIC AGENTS

American Aniline & Extract Co.
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Armour & Co.
Berkshire Color & Chemical Corp.
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Ciba Co., Inc.
Dexter Chemical Corp.
Dow Chemical Co.
Doyle Co., J. E.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Emery Industries, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Gallowhur Chemical Corp.
Glyco Products Co., Inc.
Houghton & Co., E. F.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES, INC. ADV. PG. 184
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Richmond Oil Soap & Chemical Co.
Sandoz, Inc.
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Standard Chemical Products, Inc.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
U. S. Radium Corp.
Victor Chemical Works
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

APPRAISERS

INTERTEX CORP. ADV. PG. 194
Lockwood Greene Engineers, Inc.

APRONS

Apparel (See Gloves & Aprons)
Canvas ..... A
Comb (See Aprons—Gill Box)
Condenser (See Aprons—Rub)
Decating ..... B
Feed C
Gill Box, Comb & Converter ..... D
Long Draft ..... E
Metallic ..... F
Picker (See Aprons—Feed)
Rub ..... G
Slat (See Aprons—Feed)
Spinning (See Aprons—Long Draft)
Strip (See Aprons—Feed)

Armstrong Cork Co. ..... E, G
Baker Mfg. Co. ..... C, D, E, G
BATSON CO., LOUIS P. ..... A, C, D, E, F, G
ADV. PG. 112
Bemis Bro. Bag Co. ..... A
BEST & CO., EDW. H. ..... B
ADV. PG. 169
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co. ..... G
Daniels, Inc., C. R. ..... A
DAVIS & FURBER MACHINE CO. ..... G
ADV. PG. 154
Dayton Rubber Co. ..... E, G
GESSNER CO., DAVID ..... B
ADV. PG. 135
GRATON & KNIGHT CO. ..... D, G
ADV. PG. 158
HARWOOD & SON, GEO. S. C
ADV. PG. 168
HAY CO., INC., JAMES E. ..... C, D, E, G
ADV. PG. 163
Hunter, Inc., James ..... A, C
Hunter Machine Co., James C
Kearny Mfg. Co., Inc. C
Livermore Corp., H. F. ..... A
Main & Sons, Robt. A. ..... A, C, F
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... G
PROCTOR & SCHWARTZ, INC. C
ADV. PG. 104
SACO-LOWELL SHOPS ..... C, E, G
ADV. PGS. 68-71
SARGENT'S SONS CORP., C. G. ..... A, C
ADV. PG. 84
Schmidt Mfg. Co. of S. C. ..... A, B, C, D, E, G
Schofield Co., Inc., Wm. ..... A, C
Smith Textile Apron Co., Inc. ..... A, C
Textile Apron Co. ..... E
Verdiun Machine Corp. ..... B
Whitin Machine Works ..... A, C, E, F, G
YOUNG MACHINE CO., F. A. ..... E
ADV. PG. 78

ARCHITECTS (See Engineering Services)

ARGOLS (See Mordants)

AROMATICS (See Odor-Masking Agents)

ARROWROOT STARCH (See Starch—Natural)

ASBESTOS-PROCESSING MACHINES

CURLATOR CORP. ADV. PG. 65
Duesberg-Bosson of America, Inc.
Fletcher Works
HARWOOD & SON, GEO. S. ADV. PG. 168
Jenkins Metals Shops
PLATT BROS. (SALES) LTD.—REP. BY ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Whitin Machine Works

ATOMIZERS—*Humidifying* (See Humidifiers—Room, Nozzles—Spray)

AUTOSTATERS (See Controls—Automatic & Manual Motor)

AZO DYES (See Dyes—Naphthol)

AZOIC DYES (See Dyes—Naphthol)

BACK-DRYERS

BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
CARROLL & CO., J. E. ADV. PG. 102
Greenville Steel & Foundry Co.
Hunter Machine Co., James
LANLY CO. ADV. PG. 108
P&N Machine Co., Div. Peterson & Neville, Inc.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
TEXTILE SHOPS ADV. PGS. 120, 121
Tower Iron Works
West Point Foundry & Machine Co.

BACK-FILLING MACHINES

BIRCH BROS., INC. ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
Greenville Steel & Foundry Co.
P&N Machine Co., Div. Peterson & Neville, Inc.
TEXTILE SHOPS ADV. PGS. 120, 121
Van Vlaanderen Machine Co.
Verdiun Machine Corp.

BACK-GRAY (See Cloth—Mechanical)

BACK-WASHING MACHINES

Hunter Machine Co., James
P&N Machine Co., Div. Peterson & Neville, Inc.
PROCTOR & SCHWARTZ, INC. ADV. PG 104
SARGENT'S SONS CORP., C. G. ADV. PG. 84
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—REP. BY ATKINSON, HASERICK & CO. ADV. PG. 62
Tower Iron Works

BACK-WINDERS

Ainslie Knitting Machine Co.
BIRCH BROS., INC. ADV. PG. 137
Fletcher Works
FOSTER MACHINE CO. ADV. PGS. 66, 67
Kidde Textile Machinery Corp.
Lazenby Co., F. A.
P&N Machine Co., Div. Peterson & Neville, Inc.
SCHWEITER LTD.—REP BY H. J. THEILER CORP. ADV. PG. 80
Universal Winding Co.

BACTERICIDES (See Mildew Preventives)

BAGGING MACHINES

Exact Weight Scale Co.
Miller Wrapping & Sealing Machine Co.
SARGENT'S SONS CORP., C. G. ADV. PG. 84
Tele-Sonic Packaging Corp.

BAGS

Burlap ..... A
Canvas ..... B
Dyeing & Soaking (See also Tubing—
Knit Dye C
Loom (See Bags—Canvas or Bags—Burlap)
Paper ..... D
Plastic ..... E
Waterproof Laminated ..... F

Bemis Bro. Bag Co. ..... A, B, C, D, E, F
Canton Containers ..... E
Continental Can Co., Inc. ..... D, E, F
Daniels, Inc., C. R. ..... B
Kennedy Carliner & Bag Co. ..... D, E, F
Milprint, Inc. ..... D, E, F

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

National Plastics, Inc. ..... E
Package Products Co. ..... E
Plastic Industries ..... E
SACO-LOWELL SHOPS ..... B
ADV. PGS. 68-71
Schmidt Mfg. Co. of S. C. ..... B
Union Bag & Camp Paper Co. ..... D
Visking Co. ..... E

BAGS—*Soaking* (See Bags—Dyeing & Soaking)

BAGS—*Transparent* (See Paper—Transparent)

BALANCES—*Chemical & Yarn or Laboratory* (See Scales—Laboratory)

BALE BREAKERS (See Openers—Cotton)

BALING PRESSES

Aldrich Machine Works
Beaty Machine Co., J. T.
Consolidated Baling Machine Co.
Continental Gin Co., Industrial Div.
ECONOMY BALER CO. ADV. PG. 162
Fawcett-Finney Ltd.
LOGEMANN BROS. CO. ADV. PG. 149
SARGENT'S SONS CORP., C. G. ADV. PG. 84

BALLING HEADS

Allen Beam Co.
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Hunter Machine Co., James
SANT' ANDREA NOVARA—REP. BY ERNEST L. FRANKL ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—REP. BY ATKINSON, HASERICK & CO. ADV. PG. 62
WARNER & SWASEY CO. ADV. PG. 2nd Cover

BALL-WINDING MACHINES (See Winders—Ball)

BALLING MACHINES (See Warpers—Ball)

BANDING MACHINES

Acme Steel Co.
Collins Bros. Machine Co.

BANDS—Box *Strapping* (See Strapping—Box & Carton)

BANDS

Hosiery (Paper) ..... A
Mule, Spinning & Twisting ..... B
BOOTH CO., BENJAMIN ..... B
ADV. PG. 75
Globe Woven Belting Co. ..... B
Kaumagraph Co. ..... A
Lambeth Rope Co. ..... B
Milprint, Inc. ..... A
Package Products Co. ..... A

BANDS—*Strapping* (See Strapping—Box & Carton)

BANDS—*Tie* (See Strapping—Box & Carton)

BANKERS (See Factors—Textile)

BARIUM—*Salts of*

Carbonate ..... A
Chloride ..... B
Peroxide C
Baker Chemicals Co., J. T. ..... A, B, C
Putnam Chemical Corp. C

BARRELS

Beam ..... A
Fibre ..... B
Allen Beam Co. ..... A
BATSON CO., LOUIS P. ..... A
ADV. PG. 112
Coleman Co., Inc. ..... A
Continental Can Co., Inc. ..... B
Continental Diamond Fibre Corp. ..... B
Federal Fibre Co. ..... B
Gaston County Dyeing Machine Co. ..... A
League Mfg. Co. G. F. ..... A
Martin & Sons, Adolph ..... A
NATIONAL VULCANIZED FIBRE CO. ..... N
ADV. PG. 156
Salisbury Iron Works, Inc. ..... A
Schmidt Mfg. Co. of S. C. ..... A
SPAULDING FIBRE CO. ..... B
ADV. PG. 87
West Point Foundry & Machine Co. ..... A

BARS—*Bronze* (See Bronze Bars)

BARS—*Dobby* (See Lags—Picker)

BARS—*Steel or Stainless Steel* (See Steel)

BASIC DYES (See Dyes)

BASKETS

Canvas ..... A
Extractor ..... B
Fibre (See also Boxes—Fibre & Wood) C
Perforated Metal ..... D
Wire ..... E
BATSON CO., LOUIS P. ..... A, C, D
ADV. PG. 112
Bennett Rose Co. ..... C, D
Burlington Engineering Co., Inc. ..... D
Continental Diamond Fibre Corp. C
Daniels, Inc., C. R. ..... A, B
EXCEL CO., INC. ..... A, C, D, E
ADV. PG. 165
Federal Fibre Co. C
FISHER MFG. CO. ..... C, D
ADV. PG. 111
Fletcher Works ..... B
Gaston County Dyeing Machine Co. ..... D
Glasco Equipment Corp. ..... D
Jenkins Metal Shops ..... A, B, C, D, E
Lane & Bros., Inc., W. T. ..... A
Meese, Inc. ..... A
NATIONAL VULCANIZED FIBRE CO. C
ADV. PG. 156
Paddock Co., J. C. ..... C, D
SPAULDING FIBRE CO. C
ADV. PG. 87
Sterling Engineering Co. ..... D, E
Tri-State Engineering Co. ..... E

BAST-FIBER PROCESSING MACHINES (See Cordage Machines)

BATCHERS (See Winders—Cloth)

BATT-MAKING MACHINES

CURLATOR CORP. ADV. PG. 65
Duesberg-Bosson of America, Inc.
Hunter Machine Co., James
PLATT BROS. (SALES) LTD.—REP. BY ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104

BATTERIES—*Electric Storage*

Electric Storage Battery Co.

BATTING MACHINES (See Pickers—Cotton)

BEAKERS

American Hard Rubber Co.

BEAM-DYEING MACHINES (See Dyeing Machines—Warp)

BEAM BARRELS (See Barrels—Beam)

BEAM-REPAIR SERVICE

Allen Beam Co.
Briggs-Shaffner Co.
Burlington Engineering Co., Inc.
Gaston County Dyeing Machine Co.
MILTON MACHINE WORKS ADV. PG. 159
Salisbury Iron Works, Inc.

BEAM-STORAGE RACKS

Allen Beam Co.
American Monorail Co.
BATSON CO., LOUIS P. ADV. PG. 112
Briggs-Shaffner Co.
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
EXCEL CO., INC. ADV. PG. 165
FISHER MFG. CO. ADV. PG. 111
Greenville Steel & Foundry Co.
Jenkins Metal Shops
Paddock Co., J. C.
Salisbury Iron Works, Inc.
TEXTILE SHOPS ADV. PGS. 120, 121
Tower Iron Works

BEAMERS (See Warpers—Beams)

BEAMS & BEAM HEADS

Adjustable ..... A
Dye ..... B
Narrow Fabric C
Paperless Warp ..... D
Ribbon Loom (See Beams & Beam Heads—Narrow Fabric)
Section ..... E
Salvage (See Beams & Beam Heads—Narrow Fabric)
Tricot ..... F
Warp ..... G
Webbing (See Beams & Beam Heads—Narrow Fabric)
Allen Beam Co. ..... A, C, D, E, F, G
BATSON CO., LOUIS P. ..... A, G
ADV. PG. 112
Briggs-Shaffner Co. ..... A, E, F, G
Burlington Engineering Co., Inc. ..... B
Crompton & Knowles Corp. ..... A, C, D, G
DRAPER CORP. ..... G
ADV. PG. 1
Fletcher Works C
Gaston County Dyeing Machine Co. ..... B
Hayes Industries, Inc. ..... A, E, F, G
League Mfg. Co., G. F. ..... A, G
Martin & Sons, Adolph ..... B, C, G
McBride & Co., Edw. J. ..... G
MILTON MACHINE WORKS ..... A
ADV. PG. 159
Salisbury Iron Works, Inc. ..... A, E, G
TURBO MACHINE CO. ..... B
ADV. PGS. 138, 139
Venango Engineering Co., Inc. ..... B
West Point Foundry & Machine Co. ..... A, B, E, F

BEARINGS

Aluminum ..... A
Babbitted ..... B
Ball C
Brass or Bronze ..... D
Needle or Quill ..... E
Nylon ..... F
Oilless or Self-Lubricating ..... G
Roller ..... H
Sealed-Sleeve I
Sleeve ..... J
Synthetic Composition ..... K
Thrust L
Wood ..... M
American Hard Rubber Co. ..... F
Amplex Div., Chrysler Corp. ..... D, G, J, L
ANDREWS & CO. ..... C, D, L
ADV. PG. 156
Arguto Oilless Bearing Co. ..... G, J, L, M
BATSON CO., LOUIS P. ..... A, D, G, M
ADV. PG. 112
Bound Brook Oil-Less Bearing Co. ..... D, G, J, L
Bunting Brass & Bronze Co. ..... D, G, J, L
Chain Belt Co. ..... B, H
Continental Gin Co., Industrial Div. ..... B, L
Dixie Bearings, Inc. ..... A, B, C, D, E, F, G, H, I, J, K, L
Dixie Spindle & Flyer Co. ..... D, E, F
Dixon Corp. ..... G, K
Dodge Mfg. Corp. ..... B, C, D, G, H, J, L
ENGINEERED PLASTICS, INC. ..... F
ADV. PG. 74
Fafnir Bearing Co. ..... C, L
Federal Bearings Co., Inc. ..... C, L
Greenville Steel & Foundry Co. ..... F
Graphite Metallizing Corp. ..... G, J, L
Gwilliam Co. ..... C, L
Hardwood Mfg. Co., Inc. ..... M
Hyatt Bearings Div., General Motors Corp. ..... H
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... F, H
ADV. PG. 155
Jenkins Metal Shops ..... B, C, D, F, G, H, I, J, L, M
Johnson Bronze Co. ..... A, B, D, G, I, J, L
League Mfg. Co., G. F. ..... G, M
Link-Belt Co. ..... B, C, D, G, H, I, J, L
LIVINGSTON & HAVEN, INC. ..... H
ADV. PG. 94
National Plastics, Inc. ..... C, G
NEW DEPARTURE DIV., GENERAL MOTORS CORP. C
ADV. PG. 147
Nice Ball Bearing Co. C
Nutting Truck & Caster Co. ..... H
Paramount Oilless Bearing Co. ..... G, J, K, L, M
PERKINS & SON, INC. B. F. ..... B
ADV. PG. 110
Randall Graphite Bearings, Inc. ..... D, G, J, L
Richardson Co. ..... G, K
Rollway Bearing Co. ..... H, L
Schmidt Mfg. Co. of S. C. ..... G, M
SKF Industries, Inc. ..... H, L
Smith Co., S. Morgan ..... B, M
SPAULDING FIBRE CO. ..... G, K
ADV. PG. 87
STEPHENS-ADAMSON MFG. CO., SEALMASTER BEARINGS DIV. ..... B, C, G
ADV. PG. 85
Torrington Co. ..... C, E, H, L
Westinghouse Electric Corp., General Industries, Div. ..... B, C, H, I
Westinghouse Electric Corp., Micarta Div. L
West Point Foundry & Machine Co. ..... C, L
Whitin Machine Works ..... B, D
Wood's Sons Co., T. B. ..... B, C, G

BECK DYEING MACHINES (See Dyeing Machines—Piece Goods & Reel)

BEES WAX (See Waxes—Natural)

BELT ACCESSORIES (Cements, Dressings, etc.)
Atlanta Belting Co.
Baker Mfg. Co.
BATSON CO., LOUIS P. ADV. PG. 112
Denman Textile Rubber Co.
Du Pont de Nemours & Co., Inc., E. I.
Extremultus, Inc.
Globe Woven Belting Co.
GRATON & KNIGHT CO. ADV PG. 158
HAY CO., INC., JAMES E. ADV. PG. 163
Rhoads & Sons, J. E.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
Southern Belting & Transmission Co.
Ton-Tex Corp.

BELT—*Chain* (See Chains—Conveyor & Elevator, Power Transmission)

BELT LACERS (See also Wire-Stitching Machines)
Atlanta Belting Co.
Baker Mfg. Co.
Clipper Belt Lacer Co.
Globe Woven Belting Co.
Schmidt Mfg. Co. of S. C.

BELT-MATCHING MACHINES—*V-Belts*
American Pulley Co.
Goodyear Tire & Rubber Co.
Wood's Sons Co., T. B.,

BELTS
Fabric ..... A
Leather or Plastic ..... B
Rubber C
V- ..... D
Woven Wire ..... E
Allis-Chalmers Mfg. Co. ..... D
American Pulley Co. ..... D
Armstrong Cork Co. ..... D
Ashworth Bros., Inc. ..... E
Atlanta Belting Co. ..... A, B, C, D
Baker Mfg. Co. ..... A, B, C, D
BATSON CO., LOUIS P. ..... A, B, C
ADV. PG. 112
Boston Woven Hose & Rubber Co., Div. American Blitrite Rubber Co. ..... D
Cambridge Wire Cloth Co. ..... E
Daniels, Inc., C. R. ..... A
Dayton Rubber Co. ..... C, D
Denman Textile Rubber Co. ..... B
Dodge Mfg. Corp. ..... D
Extremultus, Inc. ..... B
Gates Rubber Co. ..... C, D
Globe Woven Belting Co. ..... A
Goodyear Tire & Rubber Co. ..... C, D
GRATON & KNIGHT CO. ..... B, D
ADV. PG. 158
HAY CO., INC., JAMES E. ..... B
ADV. PG. 163
Houghton & Co., E. F. ..... B
Link-Belt Co. ..... D
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... C, D
Manheim Mfg. & Belting Co. ..... D
Matthews Equipment Co. ..... A
Morse Chain Co. C
Republic Rubber Div., Lee Rubber & Tire Corp C
Schmidt Mfg. Co. ..... A, B, C
Slip-Not Belting Corp. ..... A, B, C, D
Southern Belting & Transmission Co. ..... B
Ton-Tex Corp. ..... A, B, D
U. S. Rubber Co., Mechanical Goods Div. ..... C, D
Whitin Machine Works ..... B
Wood's Sons Co., T. B. ..... D
Worthington Corp. ..... D

BENCHES—*Work, Stands*
American Safety Table Co.
Daniels, Inc., C. R.
Jenkins Metal Shops
Paddock Co., J. C.
Ryerson & Son, Inc., Joseph
Standard Pressed Steel Co.

BENZENE (Benzol)
Barrett Div., Allied Chemical Corp.
Sun Oil Co.

BETANAPHTHOL (See Developers)

BETANAPHTHYLAMINE (See Developers)

BETAOXYNAPHTHOLIC ACID (See Developers)

BICARBONATE OF SODA (See Sodium—Salts of—Bicarbonate)

BICHLORIDE OF TIN (See Tin—Salts of—Chloride)

BICHROMATE OF POTASH (See Potassium—Salts of—Bichromate)

BICHROMATE OF SODA (See Sodium—Salts of—Bichromate)

BINDERS
Chemical ..... A
Loom ..... B
Antara Chemicals, Div. of General Aniline & Film Corp. ..... A
Baker Mfg. Co. ..... B
BATSON CO., LOUIS P. ..... B
ADV. PG. 112
Borne Chemical Co., Inc. ..... A
Bryant Chemical Corp. ..... A
Colloids, Inc. ..... A
Crompton & Knowles Corp. ..... B
DEWEY & ALMY OVERSEAS CO., DIV. W. R. GRACE & CO. ..... A
ADV. PG. 164
DRAPER CORP. ..... B
ADV. PG. 1
General Latex & Chemical Corp. ..... A
GRATON & KNIGHT CO. ..... B
ADV. PG. 158
Hardwood Mfg. Co., Inc. ..... B
Hart Products Corp. ..... A
Hercules Powder Co. ..... A
JACOBS, E. H., NORTHERN AND SOUTHERN DIV. BULLARD CLARK CO. ..... B
ADV. PG. 155
League Mfg. Co., G. F. ..... B
Livermore Corp., H. F. ..... B
Metro-Atlantic, Inc. ..... A
Miller Corp., Harry ..... A
Moretex Chemical Products, Inc. ..... A
Norris Bros. ..... B
Onyx Oil & Chemical Co. ..... A
Penick & Ford, Ltd. ..... A
POLYMER INDUSTRIES, INC. ..... A
ADV. PG. 184
POLYMER SOUTHERN, INC. ..... A
ADV. PG. 184
Putnam Chemical Corp. ..... A
ROHM & HAAS CO., INC. ..... A
ADV. PG. 185
Scher Bros. ..... A
Schmidt Mfg. Co. ..... B
Schmidt Mfg. Co. of S. C. ..... B
Shawinigan Resins Corp. ..... A
UBS Chemical Co. ..... A
Union Carbide Chemicals Co., Div., Union Carbide Corp. ..... A
Wica Chemicals, Inc. ..... A

BINS—*Steel* (See Shelves—Steel, Bins & Racks)

BLADES (See also Doctor Blades)
Corduroy Cutting ..... A
Staple Cutting ..... B
BATSON CO., LOUIS P. ..... A
ADV. PG. 112
Coleman Co., Inc. ..... A
Firsching & Son, Inc., J. A. ..... A
West Point Foundry & Machine Co. ..... A
Whitin Machine Works ..... B

BLANKETS
Compressive Shrinking ..... A
Endless ..... B
Palmer (See Blankets—Endless)
Printing (See Blankets—Endless)
Sanforized (See Blankets—Endless)
Steaming C
BATSON CO., LOUIS P. ..... A, B, C
ADV. PG. 112
BEST & CO., EDW. H. ..... A, B, C
ADV. PG. 169
DEWEY & ALMY OVERSEAS CO., DIV. W. R. GRACE & CO. ..... B
ADV. PG. 164
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... A
Schmidt Mfg. Co. of S. C. ..... A, B
STOWE-WOODWARD, INC. ..... A
ADV. PG. 93

BLEACHER'S BLUE (See Bluing)

BLEACHES
Bleaching Assistants ..... A
Bleaching Oils ..... B
American Cyanamid Co., Organic Chemicals Div. ..... A
Antara Chemicals, Div. of General Aniline & Film Corp. ..... A
Arkansas Co. ..... A
Becco Chemial Div., Food Machinery & Chemical Corp. ..... A, B
Borne Chemical Co., Inc. ..... A
Bryant Chemical Corp. ..... A, B
Coleman Co., Inc. ..... D
Columbia-Southern Chemical Corp. ..... A, B
Du Pont de Nemours & Co., Inc., E. I. ..... A
Geigy Chemical Corp. ..... A
Hart Products Corp. ..... A
Kali Mfg. Co. ..... A
Laurel Soap Mfg. Co. ..... A, B
Metro-Atlantic, Inc. ..... A
Moretex Chemical Products, Inc. ..... A
Nopco Chemical Co. ..... A
Olin Mathieson Chemical Corp., Industrial Chemical Div. ..... A
Onyx Oil & Chemical Co. ..... A
Philadelphia Quartz Co. ..... A
Putnam Chemical Corp. ..... A
Quaker Chemical Products ..... A
Rumford Chemical Works ..... A
Scher Bros. ..... A
Seydel-Woolley & Co. ..... A
Sonneborn Sons, Inc., L. ..... A
Standard Chemical Products, Inc. ..... A, B
TENNESSEE CORP. ..... A
ADV. PG. 186
Union Carbide Chemicals Co., Div. Union Carbide Corp. ..... A
Westvaco Chemical Div., Food Machinery & Chem. Corp. ..... A
Wica Chemicals, Inc. ..... A
WYANDOTTE CHEMICALS CORP. ..... A
ADV. PGS. 172, 173

BLEACHING AGENTS (See under individual headings; Calcium—Salts of—Hypochlorite, Hydrogen, Peroxide, etc.)

BLEACHING MACHINES
ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ADV. PG. 128
Burlington Engineering Co., Inc.
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
COCKER MACHINE CO. ADV. PGS. 100, 101
Gaston County Dyeing Machine Co.
GERBER MASCHINENFABRICK—REP. BY ROBERT REINER, INC. ADV. PG. 145
Greenville Steel & Foundry Co.
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
P&N Machine Co., Div. Peterson & Neville, Inc.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SMITH-DRUM DIV., TURBO MACHINE CO. ADV. PGS. 138, 139
TEXTILE SHOPS ADV. PGS. 120, 121

BLEACHING POWDER (See Calcium—Salts of—Hypochlorite)

BLEACHING SERVICE (See Commission Services)

BLEACHING STEAMERS
COCKER MACHINE CO. ADV. PGS. 100, 101
Greenville Steel & Foundry Co.
P&N Machine Co., Div. Peterson & Neville, Inc.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
RIGGS & LOMBARD INC. ADV. PGS. 122, 123
TEXTILE SHOPS ADV. PGS. 120, 121

BLENDERS—*Stock* (See Blenders—Fiber)

BLENDERS
Fiber ..... A
Liquid ..... B
Aldrich Machine Works ..... A
CUSTOM SCIENTIFIC INSTRUMENT CO. ..... B
ADV. PG. 98
HARWOOD & SON, GEO. S. ..... A
ADV. PG. 168
HILL MACHINE CO., E. F. ..... B
ADV. PG. 193
Hunter, Inc., James ..... A
Hunter Machine Co., James ..... A
International Engineering, Inc. ..... B
Pfaudler Co., Div. Pfaudler Permutit, Inc. ..... B
PLATT BROS. (SALES) LTD.—REP. BY ATKINSON, HASERICK & CO., INC. ..... A
ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ..... A
ADV. PG. 104
SACO-LOWELL SHOPS ..... A
ADV. PGS. 68-71
Schofield Co., Inc., Wm. ..... A
Whitin Machine Works ..... A

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

BLOCKS—*Glass*
Pittsburgh Corning Corp.

BLOCKS—*Hanger & Pillow*
Chain Belt Co.
Continental Gin Co., Industrial Div.
Dodge Mfg. Corp.
Fafnir Bearing Co.
Graphite Metallizing Corp.
Jenkins Metal Shops
Link-Belt Co.
Randall Graphite Bearings, Inc.
SKF Industries, Inc.
Wood's Sons Co., T. B.
Whitin Machine Works

BLOWERS (See Fans)

BLUESTONE (See Copper Sulfate)

BLUING
American Cyanamid Co., Organic Chemicals Div.
Bryant Chemical Corp.
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ADV. PG. 187

BOARDERS—*Hosiery* (See Hosiery Drying Forms)

BOARDING MACHINES (See Hosiery Boarding & Preboarding Machines)

BOARDS—*Bobbin* (See Boards—Pin)

BOARDS
Bottom ..... A
Clearer ..... B
Cloth C
Comber ..... D
Pin ..... E
Quill (See Boards—Pin)
Roving (See Boards—Pin)
Thread ..... F
Abbott Machine Co. ..... E
Baker Mfg. Co. ..... B
BATSON CO., LOUIS P. ..... A, B, C, D, E, F
ADV. PG. 112
Briggs-Shaffner Co. ..... E
EXCEL CO., INC. ..... E
ADV. PG. 165
Gibson Textile Specialty Co. ..... B
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... B
ADV. PG. 155
League Mfg. Co., G. F. ..... B
Norris Bros. ..... B
SACO-LOWELL SHOPS ..... B, F
ADV. PGS. 68-71
Sterling Engineering Co. ..... E
Textile Paper Products, Inc. C
Whitin Machine Works ..... B, E

BOBBIN-REPAIR MACHINES
Jenkins Metal Shops
Nash Co., Inc., J. M.
REINER, INC., ROBT. ADV. PG. 145
SOUTHERN BOBBIN WORKS, INC. ADV. PG. 190

BOBBIN-STRIPPING MACHINES
PLATT BROS. (SALES) LTD.—REP. BY ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Terrell Machine Co., Inc.
West Point Foundry & Machine Co.

BOBBINS (See also Spools, also Tubes)
Bottle, Paper ..... A
Bottle, Wood ..... B
Braider C
Card Room ..... D
Fibre & Plastic ..... E
Filling, Wood ..... F
Flat ..... G
Metal ..... H
Spinning I
Steaming ..... J
Synthetic Composition ..... K
Throwing L
ADOLFF, EMIL—Rep. by TEXTUBE CORP. and WATSON & DESMOND ..... F
ADV. PG. 81
Allentown Bobbin Works, Inc. ..... B, E, H, I, J, K, L
AMERICAN PAPER TUBE CO. ..... E, I, J, K
ADV. PG. 108
BATSON CO., LOUIS P. ..... B, D, E, F, I, K
ADV. PG. 112
Bowen-Hunter Bobbin Co., Inc. ..... D, F, I
Cloverleaf Freeland Corp. ..... B, E, H, I, J, K, L
DAVIS & FURBER MACHINE CO. I
ADV. PG. 154
DRAPER CORP. ..... F
ADV. PG. 1
ENGINEERED PLASTICS, INC. ..... E, I, J, L
ADV. PG. 74
Lazenby Co., F. A. ..... H
Lowell Shuttle Co. ..... B, C, D, E, F, G, I, J
MIRRO-ALUMINUM CO. ..... H
ADV. PG. 109
National Plastics, Inc. ..... E, F
LESTERSHIRE SPOOL DIV., NATIONAL VULCANIZED FIBRE CO. ..... E
ADV. PG. 157
New England Bobbin & Shuttle Co. ..... F, I
PARKS CO., M. H. ..... C, F, I, J
ADV. PG. 166
PLASTIC MOLD & ENGINEERING CO. C
ADV. PGS. 160, 161
Richardson Co. ..... E, J, K, L
SONOCO PRODUCTS CO. ..... E, I, K
ADV. PG. 54
SOUTHERN BOBBIN WORKS, INC. ..... D, E, F, I, J
ADV. PG. 190
Taylor Fibre Co. ..... E
Vermont Spool & Bobbin Co. ..... B, I, J
Westinghouse Electric Corp., Micarta Div. ..... E, I

BOILER FEED UNITS
Allis-Chalmers Mfg. Co.
Graver Water Conditioning Co.
JOHNSON CORP. ADV. PG. 116
Roy Co., Milton

BOILERS—*Steam*
Ames Iron Works, Inc.
Babcock & Wilcox Co.
Cleaver-Brooks Co.
Erie City Iron Works
Foster Wheeler Corp.
Keeler Co., E.
Orr & Sembower, Inc.
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES.—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Superior Combustion Industries, Inc.

BOLSTERS—*Spinning & Twisting*
Collins Bros. Machine Co.
DRAPER CORP. ADV. PG. 1
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PGS. 68-71
SKF Industries, Inc.
Whitin Machine Works
YOUNG MACHINE CO., F. A. ADV. PG. 78

BOIL-OFF MACHINES
BIRCH BROS., INC. ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
Gaston County Dyeing Machine Co.
Greenville Steel & Foundry Co.
Hunter Machine Co., James
P&N Machine Co., Div. Peterson & Neville, Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SMITH-DRUM DIV., TURBO MACHINE CO. ADV. PGS. 138, 139
TEXTILE SHOPS ADV. PGS. 120, 121
Werner Machine Co.

BOIL-OFF OILS (See Lubricants—Fiber, Process)

BOOSTERS—*Gas* (See Pumps—Gas)

BOOSTERS—*Vacuum* (See Pumps—Vacuum)

BORAX (See Sodium—Salts of—Borate)

BORIC ACID (See Acids)

BOSS ROLLS (See Rolls—Drawing, Roving and Spinning)

BOTTLES (See Stoneware—Acidproof)

BOW-CONTROL MACHINES
BIRCH BROS. ADV. PG. 137
MT. HOPE MACHINE CO. ADV. PG. 105

BOX LOOMS (See Looms under specific headings according to use)

BOX-STRAPPING MACHINES
Acme Steel Co.
Stanley Works, Stanley Steel Strapping Div.

BOXES—*Boiling-Out* (See Boil-Off Machines)

BOXES—*Canvas* (See Baskets—Canvas)

BOXES—*Comb* (See Comb Boxes)

BOXES—*Corrugated Shipping* (See Cartons—Corrugated Paper)

BOXES—*Dye* (See Dyeing Machines)

BRAIDERS
TEXTILE MACHINE WORKS ADV. PGS. 140, 141
Fidelity Machine Co.

BOXES
Fibre & Wood ..... A
Gill (See Gill Boxes)
Humidifying (See Cabinets—Humidifying)
Size ..... B
Starting (See Controls—Automatic & Manual Motor)
Steamer C
Stuffing (See Joints—Revolving)
Suction (See Extractors—Vacuum)
Tote ..... D
BATSON CO., LOUIS P. ..... A, D
ADV. PG. 112
Bennett Rose Co. ..... A, C, D
BIRCH BROS., INC. ..... B, C
ADV. PG. 137
Continental Diamond Fibre Corp. ..... A
Convoy, Inc. ..... A, D
Daniels, Inc., C. R. ..... D
EXCEL CO., INC. ..... A, C, D
ADV. PG. 165
Federal Fibre Co. ..... D
Fiberglass Box Co. ..... A, D
FISHER MFG. CO. ..... A, C, D
ADV. PG. 111
Gaylord Container Corp. ..... A, D
Glasco Equipment Corp. ..... D
Greenville Steel & Foundry Co. C
Hinde & Dauch Paper Co. ..... D
Jenkins Metal Shops ..... A, B, C, D
Lane & Bros., Inc., W. T. C
LEWIS CO., G. B. ..... D
ADV. PG. 168
Matthews Equipment Co. ..... A, C, D
NATIONAL VULCANIZED FIBRE CO. ..... A
ADV. PG. 156
Paddock Co., J. C. ..... A, D
P&N Machine Co., Div. Peterson & Neville, Inc. ..... B
Republic Steel Corp. ..... D
SPAULDING FIBRE CO. ..... A, D
ADV. PG. 87
Tower Iron Works C
U. S. Rubber Co., Mechanical Goods Div. ..... D
Westinghouse Electric Corp., Micarta Div. ..... D
West Point Foundry & Machine Co. ..... B

BRAID (See Webbing & Braid—Elastic)

BRAKE LININGS
Armstrong Cork Co.
BATSON CO., LOUIS P. ADV. PG. 112
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Johns-Manville Corp.
Livermore Corp., H. F.
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

BRAKES
Electric ..... A
Magnetic ..... B
Spindle C
BATSON CO., LOUIS P. ..... B
ADV. PG. 112
Cutler-Hammer, Inc. ..... A, B
DAVIS & FURBER MACHINE CO. C
ADV. PG. 154
Eaton Mfg. Co. ..... A, B
General Electric Co. ..... A, B
Westinghouse Electric Corp., General Industries, Div. ..... A, B
Whitin Machine Works C

BRAZIL WAX (See Waxes—Natural)

BREASTS—*Card & Garnett*
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Hunter Machine Co., James
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Whitin Machine Works

BRINE MACHINES
International Salt Co., Inc.
Morton Salt Co.

BRITISH GUM (See Gums)

BRONZE BARS
Amplex Div., Chrysler Corp.
Dixie Bearings, Inc.
Jenkins Metal Shops
Johnson Bronze Co.
Randall Graphite Bearings, Inc.

BROOMS (See Brushes—Industrial Cleaning Brushes, Brooms & Mops)

BRUSHES—*Cloth-Brushing Machine* (See Brushes—Machine Processing)

BRUSHING MACHINES
Ainslie Knitting Machine Co.
BIRCH BROS. ADV. PG. 137
Curtis & Marble Machine Co.
Firsching & Son, Inc., J. A.
GESSNER CO., DAVID ADV. PG. 135
Greenville Steel & Foundry Co.
Hermas Div., Curtis & Marble Machine Co.
INDUSTRIAL HEAT ENGINEERING CO. ADV. PG. 103
MENSCHNER, JOANNES—Rep. by ROBT. REINER, INC. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
West Point Foundry & Machine Co.

BRUSHES
Cloth-Brushing Machine (See Brushes—Machine Processing)
Dabbing ..... A
Electric Motor & Generator ..... B
Hand (See Brushes—Industrial Cleaning Brushes, Brooms & Mops)
Industrial Cleaning Brushes, Brooms & Mops C
Machine Processing ..... D
Steaming Machine (See Brushes—Machinery)
Stencil & Marking ..... E
Thread Dresser (See Brushes—Machinery)
Atlanta Brush Co. ..... C, D, E
Black & Decker Mfg. Co. ..... B
Felton & Son Co., S. A. ..... A, C, D, E
Graphite Metallizing Corp. ..... B
Guardian Chemical Co. C
Hillyard Chemical Co. C
HOWARD BROS. ..... D
ADV. PG. 73
Industrial Brush Co. ..... C, D
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. C
ADV. PG. 155
JENKINS SONS, M. W. ..... A, C, D
ADV. PG. 154
MASON-WORCESTER BRUSH WORKS ..... A, C, D
ADV. PG. 161
Schmidt Mfg. Co. of S. C. ..... A, C, D
Selig Co. C
Whitin Machine Works ..... D

BUCKETS & DIPPERS—*Corrosion-Resistant*
American Hard Rubber Co.
Burlington Engineering Co., Inc.
EXCEL CO., INC. ADV. PG. 165
General Scientific Equipment Co.
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Jenkins Metal Shops
Portland Copper & Tank Works
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

BUFFERS—*Coir*
Armstrong Cork Co.
Cotton-McCauley & Co., Inc.
SACO-LOWELL SHOPS ADV. PG. 68-71

BUILDER MOTIONS
Fletcher Works
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Roberts Co.

BUMPERS—*Loom & Picker* (See Straps—Loom)

BUNCH BUILDERS
DRAPER CORP. ADV. PG. 1
Lazenby Co., F. A.
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Whitin Machine Works

BUNDLE-TYING MACHINES (See Tying Machines—Bundle)

BURLING & DESPECKING MACHINES
BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

BURNERS—*Infrared* (See Dryers—Infrared)

BURNERS—*Oil & Gas* (See Direct-Fired Conversion Units)

BURR-CRUSHING MACHINES
Duesberg-Bosson of America, Inc.
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Hunter Machine Co., James
PERKINS & SON, INC., B. F. ADV. PG. 110
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. ADV. PG. 84
BUTTED-SEAM MACHINES (See also Sewing Machines)
Merrow Machine Co.

BUSHINGS
Bobbin ..... A
Bronze ..... B
Cemented Carbide ..... G
Fiber C
Self-Lubricating ..... D
Synthetic-Composition ..... E
Amplex Div., Chrysler Corp. ..... B, D
BATSON CO., LOUIS P. ..... A, B, C, D, E
ADV. PG. 112
Bound Brook Oil-Less Bearing Co. ..... B, D
Bunting Brass & Bronze Co. ..... B, D
Continental Diamond Fibre Corp. C
Dixie Bearings, Inc. ..... B, D, E
ENGINEERED PLASTICS, INC. ..... A, C
ADV. PG. 74
Graphite Metallizing Corp. ..... D
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... E
ADV. PG. 155
Jenkins Metal Shops ..... A, B, C, D, E
Johnson Bronze Co. ..... B, D
League Mfg. Co., G. F. ..... D
Matthews Equipment Co. ..... B, D
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... B, D
ADV. PG. 63
Schmidt Mfg. Co. of S. C. ..... B, C, D
SPAULDING FIBRE CO. C
ADV. PG. 87
Sterling Engineering Co. ..... A
Westinghouse Electric Corp., General Industries, Div. ..... E
Whitin Machine Works ..... B

BUTANOL (See Solvents)

BUTTON BREAKERS
Martin & Sons, Adolph
MENSCHNER, JOANNES—Rep. by ROBT REINER, INC. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Van Vlaanderen Machine Co.
Verdiun Machine Corp.

BUTYL ACETATE (See Solvents)

BUTYL ALCOHOL
Celanese Corp. of America
Eastman Chemical Products, Inc.
Scher Bros.
Union Carbide Chemicals Co., Div. Union Carbide Corp.

CABINETS
Dye Testing ..... A
Humidifying ..... B
Storage (See Lockers—Storage and Clothes Lockers & Cabinets)
Air-Perme-Ator Mfg. Co. ..... B
Jenkins Metal Shops ..... B
Lydon Bros. ..... B
PROCTOR & SCHWARTZ, INC. ..... B
ADV. PG. 104
Venango Engineering Co., Inc. ..... A

CAFETERIA EQUIPMENT
AUTOMATIC CANTEEN CO. OF AMERICA ADV. PG. 190
BATSON CO., LOUIS P. ADV. PG. 112
Jenkins Metal Shops
TAYLOR CO., HALSEY W. ADV. PG. 150

CALCIUM—*Salts of*
Carbonate ..... A
Chloride ..... B
Hypochlorite C
Phosphates ..... D
Sulfate (Gypsum) ..... G
Columbia-Southern Chemical Corp. ..... A, B, C
Dow Chemical Co. ..... B
Du Pont de Nemours & Co., Inc., E. I. ..... B
Olin Mathieson Chemical Corp., Industrial Chemical Div. ..... D
Scher Bros. ..... B
Solvay Process Div., Allied Chemical Corp. ..... B
Victor Chemical Works ..... D
WYANDOTTE CHEMICALS CORP. ..... A, B
ADV. PGS. 172, 173

CALENDER ROLLS (See Rolls—Calender)

CALENDERS
Chasing ..... A
Circular & Flat Knit ..... B
Embossing C
Friction ..... D
Ribbon ..... H
Rolling ..... E
Schreiner ..... F
Silk ..... G
APPLETON MACHINE CO. ..... A, C, D, E, F, G
ADV. PG. 125
BIRCH BROS., INC. ..... C, E
ADV. PG. 137
Black-Clawson Co. C
BUTTERWORTH & SONS CO., H. W. ..... A, C, D, E, F
ADV. PGS. 114, 115
Kastrinsky Machine Co., Inc. ..... B
Liberty Machine Co., Inc. C
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ..... A, C, D, E, F, G
ADV. PGS. 126, 127
MENSCHNER, JOANNES—Rep. by ROBT. REINER, INC. ..... B, D
ADV. PG. 145
PERKINS & SON, INC., B. F. ..... A, C, D, E, F, G
ADV. PG. 110
Rice Barton Corp. ..... C, D, F
RIGGS & LOMBARD CO. ..... D, E
ADV. PGS. 122, 123
TUBULAR TEXTILE MACHINERY CORP. ..... B
ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ..... B
ADV. PG. 158
Van Vlaanderen Machine Co. ..... C, D, E, F, G
Verdiun Machine Corp. ..... A, B, C, D, E, F, G
Waldron Corp., John ..... C, E
Werner Machine Co. ..... C, D, F
West Point Foundry & Machine Co. ..... E

CAMS
Amplex Div., Chrysler Corp.
BATSON CO., LOUIS P. ADV. PG. 112
DRAPER CORP. ADV. PG. 1
Fletcher Works
Kidde Textile Machinery Corp.
League Mfg. Co., G. F.
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Whitin Machine Works
Wildman Jacquard Co.

CANDELILLA WAX (See Waxes—Natural)

CANS
Batch ..... A
Drying ..... B
Gasoline C
Oil ..... D
Roving (See Sliver)
Sliver ..... E
Safety ..... F
Blickman & Co., Inc. ..... A, B
BUTTERWORTH & SONS CO., H. W. ..... B
ADV. PGS. 114, 115
CARROLL & CO., J. E. ..... B
ADV. PG. 102
Continental Can Co., Inc., ... C, D
General Scientific Equipment Co. ..... F
Glasco Equipment Corp. ..... B
Griffin & Sons, Ira L. ..... B
INDUSTRIAL COATINGS, INC. ..... B
ADV. PG. 167
Jenkins Metal Shops ..... A, B, E, F
Liberty Machine Co., Inc. ..... A, B
Matthews Equipment Co. ..... E
NATIONAL VULCANIZED FIBRE CO. ..... E
ADV. PG. 156
PERKINS & SON, INC., B. F. ..... B
ADV. PG. 110
P&N Machine Co., Div. Peterson & Neville, Inc. ..... B
Portland Copper & Tank Works ..... A
Rice Barton Corp. ..... B
SIMS METAL WORKS ..... B, F
ADV. PG. 117

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

SPAULDING FIBRE CO. ..... E
ADV. PG. 87
TEXTILE SHOPS ..... B
ADV. PGS. 120, 121
Tower Iron Works ..... B
TURBO MACHINE CO. ..... E
ADV. PGS. 138, 139
Van Vlaanderen Machine Co. ..... B
Verdiun Machine Corp. ..... B
Werner Machine Co. ..... B
West Point Foundry & Machine Co. ..... B

CAP SPINNING FRAMES (See Spinning Frames—Worsted)

CARBOLIC ACID (See Acids)

CARBON BISULFIDE
Selig Co.
Stauffer Chemical Co.

CARBON TETRACHLORIDE
Columbia-Southern Chemical Corp.
Dow Chemical Co.
Pennsalt Chemicals Corp.
Scher Bros.
Selig Co.
Solvay Process Div., Allied Chemical Corp.
Stauffer Chemical Co.

CARBONIZERS
Piece Goods ..... A
Raw Stock ..... B
BIRCH BROS., INC. ..... A
ADV. PG. 137
Hunter Machine Co., James ..... A, B
INDUSTRIAL HEAT ENGINEERING CO. ..... A
ADV. PG. 103
LANLY CO. ..... A
ADV. PG. 108
PROCTOR & SCHWARTZ, INC. ..... A, B
ADV. PG. 104
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. ..... B
ADV. PG. 84

CARBONIZING AGENTS
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Bryant Chemical Corp.
CONCORD CHEMICAL CO. ADV. PG. 176
Dexter Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP.
ADV. PG. 179
Hart Products Corp.
Laurel Soap Mfg. Co.
Monsanto Chemical Co., Organic Chemicals Div.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Putnam Chemical Corp.
Quaker Chemical Products
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.

CARD CLOTHING
Metallic ..... A
Wire ..... B
Ashworth Bros., Inc. ..... A, B
BOOTH CO., BENJAMIN ..... B
ADV. PG. 75
Carborundum Co. ..... B
DAVIS & FURBER MACHINE CO. ..... A, B
ADV. PG. 154
HOWARD BROS. ..... B
ADV. PG. 73
Hunter Machine Co., James ..... A
Merrimack Card Clothing Co. ..... B
PROCTOR & SCHWARTZ, INC. ..... A
ADV. PG. 104
SACO-LOWELL SHOPS ..... B
ADV. PG. 68-71

CARD-CLOTHING MACHINES
Ashworth Bros., Inc.

CARD-CLOTHING MOUNTING MACHINES (See Winders—Fillet)

CARD-CLOTHING SERVICE
Ashworth Bros., Inc.
BOOTH CO., BENJAMIN ADV. PG. 75
DAVIS & FURBER MACHINE CO. ADV. PG. 154
HOWARD BROS. ADV. PG. 73
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SACO-LOWELL SHOPS ADV. PG. 68-71

CARD GRIDS (See Grids—Cards)

CARD PARTS
BATSON CO., LOUIS P. ADV. PG. 112
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Dixie Spindle & Flyer Co.
Duesberg-Bosson of America, Inc.
Gossett Machine Works, Inc.
Jenkins Metal Shops
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SACO-LOWELL SHOPS ADV. PG. 68-71
Southern States Equipment Co.

CARDS
Cotton ..... A
Cotton Waste ..... B
Hand C
Sampling ..... D
Synthetic Staple ..... E
Woolen ..... F
Worsted ..... G
DAVIS & FURBER MACHINE CO. ..... B, D, E, F, G
ADV. PG. 154
Duesberg-Bosson of America, Inc. ..... B, E, F, G
HOWARD BROS. ..... C, D, E
ADV. PG. 73
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, B, C, E, F, G
ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ..... A, B, D, E, F, G
ADV. PG. 104
SACO-LOWELL SHOPS ..... A, F
ADV. PG. 68-71
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. A, F
ADV. PG. 62
Whitin Machine Works ..... A, B, E, F

CARD-CUTTING MACHINES (See Jacquard Card-Cutting Machine)

CARD-GRINDING MACHINES (See Grinders—Card, Garnett & Napper)

CARD-LACING MACHINES (See Jacquard Card-Lacing Machines)

CARNAUBA WAX (See Waxes—Natural)

CARRIERS—*Braider*
TEXTILE MACHINE WORKS ADV. PGS. 140, 141

CARRIERS—*Dye* (See Dye Carriers)

CARRIERS—*Yarn Package* (See Bobbins, Cones, Quills, etc.)

CARTONS—*Corrugated Paper*
Continental Can Co., Inc.
Gaylord Container Corp.
Union Bag & Camp Paper Co.

CASEIN
Borden Chemical Co., Div. Borden Co.

CASTERS & WHEELS—*Truck*
Aerol Co.
American Pulley Co.
BASSICK CO. ADV. PG. 146
Daniels, Inc., C. R.
Darnell Corp.
Dinsmore Mfg. Co.
Fairbanks Co.
FAULTLESS CASTER CO. ADV. PG. 106
Jenkins Metal Shops
Lane & Bros., Inc., W. T.
Matthews Equipment Co.
NATIONAL VULCANIZED FIBRE CO. ADV. PG. 156
Nutting Truck & Caster Co.
Thomas Truck & Caster Co.
Westinghouse Electric Corp., Micarta Div.
West Point Foundry & Machine Co.

CASTINGS
Aluminum ..... A
Iron ..... B
Nickel Alloy C
Stainless Steel ..... D
American Chain & Cable Co. ..... B, C, D
BATSON CO., LOUIS P. ..... A, B, C
ADV. PG. 112
Briggs-Shaffner Co. ..... A, B
Chain Belt Co. ..... B
Continental Gin Co., Industrial Div. ..... B
Cooper Alloy Corp. ..... D
Crucible Steel Co. of America ..... C, D
Duraloy Co. ..... C, D
Hunter Machine Co., James ..... A, B
International Nickel Co., Inc. C
Kluttz Machine & Foundry Co. ..... A, B, C
Link-Belt Co. ..... B
Republic Steel Corp. ..... B
Salisbury Iron Works, Inc. ..... A, B, C
West Point Foundry & Machine Co. ..... B

CASTOR OIL (See Oil—Natural)

CASTOR OIL—*Sulfonated* (See Wetting Agents)

CAUSTIC POTASH (See Potassium—Salts of—Hydroxide)

CAUSTIC SODA (See Sodium—Salts of—)

CEILING CONDENSERS
Aldrich Machine Works
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Hunter Machine Co., James
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PG. 68-71
SARGENT'S SONS CORP., C. G. ADV. PG. 84

CELLULOSE ACETATE
BATSON CO., LOUIS P. ADV. PG. 112
Buckeye Cellulose Corp.
Celanese Corp. of America
Du Pont de Nemours & Co., Inc., E. I.
Eastman Chemical Products, Inc.

CENTRIFUGALS (See Extractors—Centrifugal)

CERESIN WAX (See Waxes—Natural)

CHAINS
Balance ..... A
Block ..... B
Card C
Conveyor & Elevator ..... D
Power-Transmission (Roller) ..... E
Power-Transmission (Silent) ..... F
American Chain & Cable Co. ..... B
Chain Belt Co. ..... A, B, D, E
Chainveyor Corp. ..... D
Diamond Chain & Mfg. Co. ..... D, E
Dinsmore Mfg. Co. ..... E, F
Dodge Mfg. Corp. ..... E
FERGUSON GEAR CO. ..... E, F
ADV. PG. 163
Link-Belt Co. ..... A, B, C, D, E, F
Main & Sons, Robt. A. ..... D
Morse Chain Co. ..... E, F
NATIONAL DRYING MACHINE CO., INC. ..... D
ADV. PG. 119
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. C
ADV. PG. 63
Union Chain & Mfg. Co. ..... D, E, F

CHAIRS—*Factory* (See Steel Stools & Chairs—Factory)

CHALK—*Colored* (See Crayons—Marking, also Calcium—Salts of—Carbonate)

CHANGEOVERS—*Drawing*
BATSON CO., LOUIS P. ADV. PG. 112
Collins Bros. Machine Co.
GASTONIA ROLLER, FLYER & SPINDLE CO. ADV. PG. 157
Gossett Machine Works, Inc.
IDEAL INDUSTRIES, INC. ADV. PG. 90
SACO-LOWELL SHOPS ADV. PG. 68-71
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62

CHANGEOVERS—*Roving, Drafting*
BATSON CO., LOUIS P. ADV. PG. 112
GASTONIA ROLLER, FLYER & SPINDLE CO. ADV. PG. 157
Progressive Engineering, Inc.
SACO-LOWELL SHOPS ADV. PG. 68-71
Whitin Machine Works

CHANGEOVERS—*Spinning*
Band to Tape ..... A
Drafting ..... B
Increased Traverse C
BATSON CO., LOUIS P. ..... B, C
ADV. PG. 112
Collins Bros. Machine Co. ..... A, C
Cotton-McCauley & Co., Inc. ..... B
Dixon Corp. ..... B
GASTONIA ROLLER, FLYER & SPINDLE CO. ..... B
ADV. PG. 157
Matthews Equipment Co. ..... A, C
Progressive Engineering, Inc. ..... B
Roberts Co. ..... A, B, C
SACO-LOWELL SHOPS ..... A, B, C
ADV. PG. 68-71
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ..... B
ADV. PG. 88
Whitin Machine Works ..... A, B, C
YOUNG MACHINE CO., F. A. ..... A, B, C
ADV. PG. 78

CHANGEOVERS—*Twister*
BATSON CO., LOUIS P. ADV. PG. 112
Collins Bros. Machine Co.
Fletcher Works
GASTONIA ROLLER, FLYER & SPINDLE CO. ADV. PG. 157
Matthews Equipment Co.
SACO-LOWELL SHOPS ADV. PG. 68-71
Universal Winding Co.
Whitin Machine Works

CHANGEOVERS—*Winder*
BATSON CO., LOUIS P. ADV. PG. 112
Fletcher Works
FOSTER MACHINE CO. ADV. PGS. 66, 67
SACO-LOWELL SHOPS ADV. PG. 68-71
Universal Winding Co.

CHELATING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Borne Chemical Co., Inc.
Calgon Co.
Colloids, Inc.
Dexter Chemical Corp.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
Geigy Chemical Corp.
Glyco Products Co., Inc.
Hart Products Corp.
Mona Industries, Inc.
Moretex Chemical Products, Inc.
Oakite Products, Inc.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Refined Products Corp.
Scher Bros.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Victor Chemical Works
Wica Chemicals, Inc.

CHINCHILLA MACHINES
Hunter Machine Co., James

CHLORIDE OF LIME (See Calcium—Salts of—Hypochlorite)

CHLORINATORS
National Aniline Div., Allied Chemical Corp.
Roy Co., Milton

CHLORINE
Antara Chemicals, Div. of General Aniline & Film Corp.
Columbia-Southern Chemical Corp.
Dow Chemical Co.
Hooker Electrochemical Co., Chemicals Div.
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Pennsalt Chemicals Corp.
Solvay Process Div., Allied Chemical Corp.
Stauffer Chemical Co.
Westvaco Chemical Div., Food Machinery & Chem. Corp.
WYANDOTTE CHEMICALS CORP., ADV. PGS. 172, 173

CHLORINE DIOXIDE
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Solvay Process Div., Allied Chemical Corp.

CHLOROFORM (See Solvents)

CHROME ALUM
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Scher Bros.

CHROME COLORS
American Cyanamid Co., Organic Chemicals Div.
Atlantic Chemical Corp.
Ciba Co., Inc.
Columbia-Southern Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ADV. PG. 187
National Aniline Div., Allied Chemical Corp.
Peerless Color Co.
Reichhold Chemicals, Inc.
Sherwin Williams Co., Pigment, Color & Chemical Div.

CHROMIUM ACETATE (See Mordants)

CHROMIUM CHLORIDE (See Mordants)

CHROMIUM FLUORIDE (See Mordants)

CIRCUIT BREAKERS
Allis-Chalmers Mfg. Co.
Charlotte Chemical Laboratories, Inc.
Cutler-Hammer, Inc.
Dolge Co., C. B.
General Electric Co.
I.T.E. Circuit Breaker Co.
League Mfg. Co., C. F.

CITRIC ACID (See Acids)

CLEANERS—*Air* (See Collectors—Dust & Fume)

CLEANERS—*Chemical*
Cotton ..... A
Loom ..... B
Needle C
Reed ..... D
Spinning Frame Roll ..... E
Bryant Chemical Corp. ..... D
Charlotte Chemical Laboratories, Inc. ..... A
Colloids, Inc. ..... A, B, C, D
Esso Standard Oil Co. ..... B, C
Greensboro Loom Reed Co., Inc. ..... D
Guardian Chemical Co. ..... B
Miller Corp., Harry ..... B, C, D, E
Nopco Chemical Co. ..... A
Oakite Products, Inc. ..... B, C, D, F
Olin Mathieson Chemical Corp., Industrial Chemical Div. ..... A
Philadelphia Quartz Co. ..... A
Putnam Chemical Corp. ..... A
Scholler Bros., Inc. C
Selig Co. ..... A, B
TEXTILE ADJUNCTS CORP. ..... A
ADV. PG. 182
Wica Chemicals, Inc. ..... A, B, C, D, E

CLEANERS—*Mechanical*
Cotton ..... A
Loom ..... B
Quill (See Bobbin-Stripping Machines)
Reed C
Spinning Frame Roll ..... D
Aldrich Machine Works ..... A
BATSON CO., LOUIS P. ..... D
ADV. PG. 112
Carolina Machinery Co. ..... A
CENTRIF-AIR MACHINE CO. ..... A
ADV. PG. 160
Edda International Corp. C
Greensboro Loom Reed Co., Inc. C
Guardian Chemical Co. ..... E
JENKINS SONS, M. W. C
ADV. PG. 154
Oakite Products, Inc. ..... B, C, D
Parks-Cramer Co. ..... B
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, D
ADV. PG. 63
Salisbury Iron Works, Inc. ..... A
Whitin Machine Works ..... A, D

CLEANERS—*Portable Industrial Floor Vacuum & Blowers*
American Floor Machine Co. ..... A, B
Atlas Floor Surfacing Machinery Corp.
Black & Decker Mfg. Co.
DOLGE CO., C. B. ADV. PG. 184
Edda International Corp.
FINNELL SYSTEM, INC. ADV. PG. 136
General Floorcraft, Inc.
Hillyard Chemical Co.
Horn Co., Inc.
Kent Co.
Multi-Clean Products, Inc.
Selig Co.
Tennant Co., G. H.
West Chemical Products, Inc.

CLEANERS—*Traveling Blower*
American Moistening Co.
BAHNSON CO. ADV. PG. 4
American Monorail Co.
Louden Machinery Co.
Parks-Cramer Co.

CLEANERS—*Vacuum* (See Cleaners—Portable Industrial Floor Vacuum, or Strippers—Card, also Collectors—Broken End, Dust & Fume, or Lint & Fly)

CLEARERS
Flat & Revolving ..... A
Roll ..... B
Spring C
Baker Mfg. Co. ..... A
BATSON CO., LOUIS P. ..... A, B, C
ADV. PG. 112
BEST & CO., EDW. H. ..... A
ADV. PG. 169
Gibson Textile Specialty Co. ..... A, B
Gossett Machine Works, Inc. ..... B
Hardwood Mfg. Co., Inc. ..... A
Jenkins Metal Shops ..... A, B, C
League Mfg. Co., G. F. ..... A, B
Meadows Mfg. Co. C
Norris Bros. ..... A
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... B
ADV. PG. 63
Roberts Co. ..... B
SACO-LOWELL SHOPS ..... A, B
ADV. PG. 68-71
Schmidt Mfg. Co. of S. C. ..... A, B
Textile Apron Co. ..... A
Whitin Machine Works ..... A, B
YOUNG MACHINE CO., F. A. ..... A
ADV. PG. 78

CLIPPERS—*Selvage-Loop* (See Cutters—Selvage-Loop)

CLIPS
Strapping ..... A
Tenter ..... B
Acme Steel Co. ..... A
BATSON CO., LOUIS P. ..... A, B
ADV. PG. 112
BUTTERWORTH & SONS CO., H. W. ..... B
ADV. PGS. 114, 115
FAMATEX G.M.B.H.—REP. BY ROBT. REINER, INC. ..... B
ADV. PG. 145
MARSHALL & WILLIAMS CORP. ..... B
ADV. PGS. 132, 133
Van Vlaanderen Machine Co. ..... B

CLOCKS (See Counters)

CLOTH (See also Blankets)
Buffing ..... A
Card Grinding ..... B
Filter C
Mechanical ..... D
Wire ..... E
Albany Felt Co. ..... C, D
AMERICAN FELT CO. ..... A, C
ADV. PG. 166
Armour & Co. ..... A
Ashworth Bros., Inc. ..... B
BATSON CO., LOUIS P. ..... A, C, D
ADV. PG. 112
BEST & CO., EDW. H. ..... C, D
ADV. PG. 169
Brositex Machine Co. C
Cambridge Wire Cloth Co. ..... C, E
Daniels, Inc., C. R C
Orr Felt & Blanket Co. ..... D
Schmidt Mfg. Co. of S. C. ..... D
Shriver & Co. C

CLOTH-BRUSHING MACHINES (See Brushing Machines)

CLOTH-LUSTERING MACHINES (See Lustering Machines)

CLOTH-MARKING MACHINES (See Marking Machines, also Numbering Machines)

CLOTH-MEASURING MACHINES (See Counters—Cloth Yardage)

CLOTHING—*Card* (See Card Cloth ing)

CLOTHING—*Napper* (See Napper Clothing)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

CLUTCH FACINGS
AMERICAN FELT CO. ADV. PG. 166
Amplex Div., Chrysler Corp.
Armstrong Cork Co.
BATSON CO., LOUIS P. ADV. PG. 112
Graphite Metallizing Corp.
Johns-Manville Corp.
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

CLUTCHES
Disk ..... **A**
Electric ..... **B**
Friction ..... **C**
Hydraulic ..... **D**
Spindle ..... **E**
Magnetic ..... **F**
Mercury ..... **G**
AMERICAN FELT CO. ..... A, C
ADV. PG. 166
Baker Mfg. Co. ..... A
BATSON CO., LOUIS P. ..... F
ADV. PG. 112
Cutler-Hammer, Inc. ..... B, F
Dodge Mfg. Corp. C
DRAPER CORP. ..... A
ADV. PG. 1
Eaton Mfg. Co ..... A, B, C
Graphite Metallizing Corp. C
Liberty Machine Co., Inc. ..... A, C
Link-Belt Co. C
MERCURY CLUTCH DIV., AUTOMATIC STEEL PRODUCTS ..... C, G
ADV. PG. 168
Morse Chain Co. ..... A, C
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, C, E
ADV. PG. 63
Twin Disc Clutch Co. ..... A, C, D
Verdiun Machine Corp. C
Werner Machine Co. C
West Point Foundry & Machine Co. C
Whitin Machine Works ..... C, F

COATING AGENTS (See Under Individual Headings, Cellulose, Acetate, Pyroxylin, etc.)

COATING MACHINES—*Fabric*
Black-Clawson Co.
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
INDUSTRIAL HEAT ENGINEERING CO. ADV. PG. 103
Industrial Ovens
Jenkins Metal Shops
LANLY CO. ADV. PG. 108
Liberty Machine Co., Inc.
MENSCHNER, JOANNES—REP. BY ROBT. REINER, INC. ADV. PG. 145
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Verdiun Machine Corp.
Waldron Corp., John
Werner Machine Co.

COCONUT OIL (See Oil—Natural)

COILERS—*Warp & Silver*
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Gossett Machine Works, Inc.
IDEAL INDUSTRIES, INC. ADV. PG. 90
Matthews Equipment Co.
McDonough Power Equipment, Inc.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Southern States Equipment Co.
WARNER & SWASEY CO. ADV. PG. 2nd Cover
Whitin Machine Works

COILS—*Pipe* (See also Plates—Heating & Cooling)
Crane Co.
Crucible Steel Co. of America

COLLECTORS
Broken End & Noil, Vacuum ..... **A**
Dust & Fume ..... **B**
Lint & Fly ..... **C**
Yarn, Vacuum ..... **D**
Albany Felt Co. ..... D
American Air Filter Co. ..... B, C
BAHNSON CO. ..... A, C, D
ADV. PG. 4
BATSON CO., LOUIS P. ..... A, D
ADV. PG. 112
DAVIS & FURBER MACHINE CO. ..... A, D
ADV. PG. 154
Jenkins Metal Shops ..... A, B, C, D
Lehigh Fan & Blower Div., Fuller Co. ..... B
Parks-Cramer Co. ..... A, C, D
Penumafil Corp. ..... A, C, D
Portland Copper & Tank Works ..... B
PROCTOR & SCHWARTZ, INC. ..... B, C
ADV. PG. 104
Roberts Co. ..... A, D
Tower Iron Works C
Whitin Machine Works C

COLLOID MILLS (See Mills—Colloid)

COLOR-MATCHING EQUIPMENT
Bausch & Lomb Optical Co.
Crown Engineering & Sales Co.

COLOR LAKES (See Lake Colors)

COMB BOXES
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Matthews Equipment Co.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Southern States Equipment Co.
Whitin Machine Works

COMBER PARTS—*Cotton*
BATSON CO., LOUIS P. ADV. PG. 112
Dixie Spindle & Flyer Co.
Gastonia Textile Sheet Metal Works, Inc.
Jenkins Metal Shops
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PG. 68-71
Schmidt Mfg. Co. of S. C.
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ADV. PG. 88
Whitin Machine Works

COMBERS
Cotton ..... **A**
Worsted (French or Rectilinear) ..... **B**
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A
ADV. PG. 63
SACO-LOWELL SHOPS ..... A
ADV. PG. 68-71
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ..... B
ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. A, B
ADV. PG. 62
Whitin Machine Works ..... A

COMBS
Beamer, Warper & Slasher ..... **A**
Doffing ..... **B**
Expansion ..... **C**
Weaving ..... **D**
Allen Beam Co. ..... A, B, C, D
ANDREWS CO. ..... A, C, D
ADV. PG. 156
Carolina Loom Reed Co. ..... A, C, D
COCKER MACHINE & FOUNDRY CO. ..... A, C
ADV. PGS. 100, 101
DAVIS & FURBER MACHINE CO. ..... B
ADV. PG. 154
Greensboro Loom Reed Co., Inc. ..... A, C, D
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... D
ADV. PG. 155
Livermore Corp., H. F. ..... D
PROCTOR & SCHWARTZ, INC. ..... B
ADV. PG. 104
SACO-LOWELL SHOPS ..... B
ADV. PG. 68-71
Schmidt Mfg. Co. ..... A, D
Schmidt Mfg. Co. of S. C. ..... A, B, D
Southern States Equipment Co. ..... B
West Point Foundry & Machine Co. ..... A
Whitin Machine Works ..... B

COMMISSION SERVICES
Bleaching, Dyeing, Printing & Finishing ..... **A**
Plastic Coating for Machine Parts ..... **B**
Testing Laboratories (See Laboratories—Testing)
Throwing ..... **C**
Caledonia Dye Works ..... A
Clinton Dye Works ..... A
Electro Chemical Eng. & Mfg. Co. ..... B
ENGINEERED PLASTICS, INC. ..... B
ADV. PG. 74
Fletcher Works C
Franklin Process, Div. Indian Head Mills ..... A
Globe Dye Works Co. ..... A
Hoffner Rayon Co. ..... A, C
INDUSTRIAL COATINGS, INC. ..... B
ADV. PG. 167
Kahn & Feldman, Inc. C
Kenyon of Kenyon, R. I. ..... A
Ohio Falls, Inc. ..... A
Sayles Finishing Plants ..... A
Standard Bleachery ..... A

COMPARATORS—*Color* (See Color Comparators)

COMPARATORS—*ph Slide* (See Instruments—ph Indicator)

COMPENSATORS—*Cloth*
BIRCH BROS., INC. ADV. PG. 137
CARROLL & CO., J. E. ADV. PG. 102
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
Greenville Steel & Foundry Co.
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
Liberty Machine Co., Inc.
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
MT. HOPE MACHINERY CO. ADV. PG. 105
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
TEXTILE SHOPS ADV. PGS. 120, 121
Waldron Corp., John

COMPENSATORS—*Motor Starting* (See Controls—Automatic and Manual Motor)

COMPLEXING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
Calgon Co.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Hart Products Corp.
Mona Industries, Inc.
Refined Products Corp.
Rumford Chemical Works
Scher Bros.
Wica Chemicals, Inc.

COMPRESSORS—*Air* (See Compressors)

COMPRESSORS—*Thread* (See Thread Compressors)

COMPRESSORS—*Warp* (See Warp Compressors)

CONDENSATION RETURN UNITS
Cochrane Corp.
JOHNSON CORP. ADV. PG. 116

CONDENSERS—*Apron* (See Tape Condensers)

CONDENSERS—*Ceiling* (See Ceiling Condensers)

CONDENSERS—*Cotton* (See Ceiling Condensers)

CONDENSERS—*Evaporative*

CONDENSERS—*Ring Doffer* (See Ring Doffer Condensers)

CONDENSERS—*Surface, Jet & Barometric Pressure*
Allis-Chalmers Mfg. Co.
Foster Wheeler Corp.
Ingersoll-Rand Co.
Worthington Corp.

CONDENSERS—*Tape* (See Tape Condensers)

CONDITIONERS—*Air* (See Air Conditioners)

CONDITIONERS—*Cloth* (See Dryers—Piece Goods, or Ovens—Conditioning)

CONDITIONERS—*Hosiery* (See Ovens—Conditioning)

CONDITIONERS—*Water* (See Water Treatment)

CONDITIONERS—*Yarn* (See also Dryers)
Air-Perme-Ator Mfg. Co.
Burkart Schier Chemical Co.
Gaston County Dyeing Machine Co.
INDUSTRIAL DRYER CORP. ADV. PG. 72
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
LANLY CO. ADV. PG. 108
Lydon Bros.
Miller Corp., Harry
Mona Industries, Inc.
Nopco Chemical Co.
Parks-Cramer Co.
POLYMER SOUTHERN, INC. ADV. PG. 184
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Quaker Chemical Products

RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. ADV. PG. 84
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Wak Industries

CONDITIONING AGENTS
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Charlotte Chemical Laboratories, Inc.
Du Pont de Nemours & Co., Inc., E. I.
Esso Standard Oil Co.
Hart Products Corp.
Kali Mfg. Co.
Kearny Mfg. Co., Inc
Laurel Soap Mfg. Co.
Miller Corp., Harry
Mona Industries, Inc.
Quaker Chemical Products
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Standard Chemical Products, Inc.
Stein, Hall & Co., Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.

CONDITIONING OVENS—(See Ovens—Conditioning)

CONDUIT—*Electrical & Fittings*
Johns-Manville Corp.
Republic Steel Corp.

CONES
Fibre & Synthetic ..... **A**
Paper ..... **B**
Perforated (See Tubes—Perforated)
Wood ..... **C**
American Paper Products Co. ..... B
Hardwood Mfg. Co., Inc. C
League Mfg. Co., G. F. C
Lowell Shuttle Co. C
NORTH WATERFORD SPOOL CO. C
ADV. PG. 158
Richardson Co. ..... A
SONOCO PRODUCTS CO. ..... A, B
ADV. PG. 54

CONING OILS (See Lubricants—Fiber & Yarn)

CONSULTANTS (See also Engineering Services and Research)
Cost ..... **A**
Management ..... **B**
Materials Handling ..... **C**
Packaging ..... **D**
Production Control ..... **E**
Barnes Textile Associates, Inc. ..... A, B, E
Liberty Machine Co., Inc. C
Loper Co., Ralph E. ..... A, B, E
Milprint, Inc. ..... D
Scheuer Textile Consultants, Inc. ..... A, B
TEXTILE ADJUNCTS CORP. ..... B, D
ADV. PG. 182
THOMASON TEXTILE SERVICE, INC. ..... B, E
ADV. PG. 194
U. S. TESTING CO., INC. ..... E
ADV. PG. 192
WERNER TEXTILE CONSULTANTS ..... A, B, C, D, E
ADV. PG. 192

CONTROL CENTERS—*Electric*
ALLEN-BRADLEY CO. ADV. PG. 3rd Cover
Barber-Colman Co.
Clark Controller Co.
Cutler-Hammer, Inc.
General Electric Co.
Kidde Textile Machinery Corp.
Westinghouse Electric Corp., General Industries, Div.

CONTROLS
Automatic Detwisting ..... **A**
Automatic Doff ..... **B**
Automatic & Manual Motor ..... **C**
Automatic Spinning ..... **D**
Automatic Yarn-Gauge ..... **E**
Carding Machine ..... **F**
Color-Measurement ..... **G**
Combustion (See Regulators—Damper & Draft)
Damper, Regulating (See Regulators—Damper & Draft)
Dyeing Machine ..... **H**
Filling Straightening (See Filling Straightening Devices)
Fluid-Flow ..... **I**
Humidity ..... **J**
Liquid-Density ..... **K**
Liquid-Level ..... **L**
Moisture (See Controls—Humidity)
Picker ..... **M**
Pressure & Vacuum ..... **N**
Slasher ..... **O**
Sliver Lap ..... **P**
Speed (See Transmissions—Variable-Speed)
Temperature ..... **Q**
Tension-Winding ..... **R**
Tenter-Clip Rail ..... **S**
Time-Cycle ..... **T**
Water Blending (See Controls—Temperature)
ALLEN-BRADLEY CO. ..... C, N, Q
ADV. PG. 3rd Cover
American Moistening Co. ..... J
Askania Regulator Co. ..... I, N, S
BAHNSON CO. ..... J
ADV. PG. 4
Bailey Meter Co. ..... I, N, Q, T
Barber-Colman Co. ..... B, J, Q, T
Black-Clawson Co. ..... R
Bristol Co. ..... C, H, I, J, K, N, O, Q, T
Burlington Engineering Co., Inc. ..... H, N
Cash Co., A. W. ..... N, Q
Clark Controller Co. C
Cutler-Hammer, Inc. ..... C, F, N, T
Dinsmore Mfg. Co. C
Eaton Mfg. Co. ..... C, R
Foxboro Co. ..... I, J, K, N, Q, T
Gaston County Dyeing Machine Co. ..... H, N, Q, T
General Electric Co. ..... C, N, O, Q, R, S
Griffin & Sons, Ira L. ..... Q
Hagan Chemicals & Controls, Inc. ..... I, K
Hays Mfg. Co. I
HOBBS MFG. CO. ..... R
ADV. PG. 161
Intercontinental Dynamics Corp. ..... S
JOHNSON SERVICE CO. ..... I, K, M
ADV. PG. 151
Leeds & Northrup Co. ..... I, J, Q
Liberty Machine Co., Inc. ..... R
Lindly & Co., Inc. ..... R
LIVINGSTON & HAVEN, INC. ..... M, N, O, T
ADV. PG. 94
MARSHALL & WILLIAMS CO. ..... S
ADV. PGS. 132, 133
Mason-Neilan, Div. of Worthington Corp. ..... I, J, N, O, Q, T
Matthews Equipment Co. ..... R
McBride & Co. Edw. J. ..... R
Minneapolis-Honeywell Regulator Co., Industrial Div. ..... I, N, Q, T
Minneapolis-Honeywell Regulator Co. ..... I, J, N, Q
MT. HOPE MACHINERY CO. ..... A
ADV. PG. 105
Parks-Cramer Co. ..... J
Powers Regulator Co. ..... J, N, O, Q, T
Precision Thermometer & Instrument Co. ..... K, Q
Reliance Electric & Engineering Co. ..... C, D, F, H, I, O, R, T
Sarco Co., Inc. ..... Q
Stanley Works, Magic Door Sales ..... B
Strandberg Engineering Lab., Inc. ..... O
Taylor Fibre Co. ..... H
TURBO MACHINE CO. ..... H
ADV. PGS. 138, 139
Velotron, Inc. ..... M
Westinghouse Electric Corp., General Industries Div. C
Weston Instruments, Div. Daystrom, Inc. ..... J, N, O, Q, T
West Point Foundry & Machine Co. ..... O, Q

CONVEYORS
Apron, Belt or Bucket ..... **A**
Chain ..... **B**
Gravity ..... **C**
Overhead Monorail ..... **D**
Pneumatic ..... **E**
Portable Belt ..... **F**
Roller ..... **G**
Screw or Spiral ..... **H**
Vertical Suspended Tray ..... **I**
Truck ..... **J**
Underfloor ..... **K**
Aldrich Machine Works ..... A
Alvey Conveyor Mfg. Co. ..... A, B, C, F, G, I
American Monorail Co. ..... B, D
American Pulley Co. C
American Safety Table Co. ..... A
Baker Mfg. Co. ..... A
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co. ..... A
Buschman Co., E. W. ..... A, B, C, D, F, G, I
Carolina Machinery Co. ..... A
CENTRIF-AIR MACHINE CO. ..... A
ADV. PG. 160
Chain Belt Co. ..... A, B, H, I
Chainveyor Corp. ..... B, C, D
Cleveland Crane & Engineering Co. ..... D
Continental Gin Co., Industrial Div. ..... A, B, G, H
CYCLONE FENCE DEPT., U. S. STEEL CORP. ..... A
ADV. PG. 153
Dixie Bearings, Inc. ..... A, C, G
Eriez Mfg. Co. ..... E
HARWOOD & SON, GEO. S. ..... A
ADV. PG. 168
Hunter Machine Co., James ..... A
Jenkins Metal Shops ..... A, C, F, G
Kearny Mfg. Co., Inc. ..... A
LANLY CO. ..... A, B, D, G, I
ADV. PG. 108
Liberty Machine Co., Inc. ..... A, B
Link-Belt Co. ..... A, B, D, F, G, H, I
Logan Co. ..... A, B, C, G, J
Louden Machinery Co. ..... D
Main & Sons, Robt. A. ..... A, B
Mathews Conveyor Co. ..... A, B, C, D, F, G, I
Michigan Oven Co. ..... A, F, G, H, I
NATIONAL DRYING MACHINE CO., INC. ..... A, B, H
ADV. PG. 119
PROCTOR & SCHWARTZ, INC. ..... A, B, E
ADV. PG. 104
Richards-Wilcox Mfg. Co. ..... B, C, D
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
SACO-LOWELL SHOPS ..... A
ADV. PG. 68-71
Salisbury Iron Works, Inc. ..... A, B
SARGENT'S SONS CORP., C. G. ..... A, B, E
ADV. PG. 84
Schofield Co., Inc., Wm. ..... A
Standard Conveyor Co. ..... A, B, C, F, G, H, I
Stephens-Adamson Mfg. Co. ..... A, F
Triangle Equipment Co., Inc. ..... D
Union Chain & Mfg. Co. ..... A, B
U. S. Rubber Co., Mechanical Goods Div. ..... A
Wehle Conveyor Co. ..... B
Whitin Machine Works ..... A

COOLERS—*Air* (See Air Conditioners)

COOLERS—*Drinking Water* (See Coolers—Water)

COOLERS—*Evaporative* (See Humidifiers—Room)

COOLERS—*Water*
Acme Industries, Inc.
TAYLOR CO., HALSEY W. ADV. PG. 150
Westinghouse Electric Corp., General Industries Div.

COP HOLDERS (See Holders—Cop)

COPPER & BRASS FITTINGS (See Fittings—Copper & Brass)

COPPER CHLORIDE (See Cupric & Cuprous—Salts of—Chloride)

COPPER NITRATE (See Cupric—Salts of—Nitrate)

COPPER SULFATE
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Du Pont de Nemours & Co., Inc., E. I.
TENNESSEE CORP. ADV. PG. 186

COPPER SULFIDE (See Cupric—Salts of—Sulfide)

COPS (See Bobbins)

CORD—*Dobby & Harness* (See Stops—Loom)

CORDAGE MACHINES
ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ADV. PG. 128
CURLATOR CORP. ADV. PG. 65
Haskell-Dawes Machine Co., Inc.
Jenkins Metal Shops
Scher Bros.
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
WARNER & SWASEY CO. ADV. PG. 2nd Cover

CORES
Paper ..... **A**
Aluminum, Steel, Wood ..... **B**
American Paper Products Co. ..... A
BATSON CO., LOUIS P. ..... B
ADV. PG. 112
JENKINS SONS, M. W. ..... B
ADV. PG. 154
League Mfg. Co., G. F. ..... B
Martin & Sons, Adolph ..... B
McCaskie, Inc., Wm. ..... B
NORTH WATERFORD SPOOL CO. ..... B
ADV. PG. 158
Schmidt Mfg. Co. of S. C. ..... B
SONOCO PRODUCTS CO. ..... A
ADV. PG. 54
Textile Paper Products, Inc. ..... A
Verdiun Machine Corp. ..... B

CORN STARCH (See Starch—Natural)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

CORN SUGAR (See Glucose)

CORN SYRUP (See Glucose)

CORROSION PREVENTIVES
American-Marietta Co.
Antara Chemicals, Div. of General Aniline & Film Corp.
Barrett Div., Allied Chemical & Dye Corp.
Borne Chemical Co., Inc.
Calgon Co.
Dixon Crucible Co., Joseph
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Electro Chemical Eng. & Mfg. Co.
Esso Standard Oil Co.
Gates Rubber Co.
Gulf Oil Co.
Hercules Powder Co.
Houghton & Co., E. F.
Johns-Manville Corp.
Miller Corp., Harry
Minnesota Mining & Mfg. Co.
Nopco Chemical Co.
Oakite Products, Inc.
Pfaudler Co., Div. Pfaudler Permutit, Inc.
Philadelphia Quartz Co.
Putnam Chemical Corp.
Richmond Oil Soap & Chemical Co.
Rumford Chemical Works
Scher Bros.
Solvy Process Div., Allied Chemical Corp.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Valvoline Oil Co., Div. Ashland Oil & Refining Co.
West Chemical Products, Inc.

COT BUFFERS (See Buffers—Cot)

COTS
Armstrong Cork Co.
BATSON CO., LOUIS P. ADV. PG. 112
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Dayton Rubber Co.
Holdsworth Mfg. Co.
MT. HOPE MACHINERY CO. ADV. PG. 105
SONOCO PRODUCTS CO. ADV. PG. 54
Textile Apron Co.
Whitin Machine Works

COTTON YARNS (See Yarns—Cotton)

COUNTERS
Cloth Yardage ..... A
Electrical ..... B
Hank (See Counters—Yarn Yardage)
Loom Pick C
Operation (See also Loom Pick) ..... D
Thread (See Glasses—Magnifying)
Twist (See Testers—Twist)
Yarn Yardage ..... E
BIRCH BROS., INC. ..... A
ADV. PG. 137
DAVIS & FURBER MACHINE CO. ..... D
ADV. PG. 154
The Denominator Co., Inc. ..... D
Durant Mfg. Co. ..... A, B, C, D
Fletcher Works ..... B, D
Holdsworth Mfg. Co., Inc. ..... E
Wak Industries ..... A, B, C, D, E
Wak Industries ..... A, B, C, D, F
West Point Foundry & Machine Co. ..... A, E
PERKINS & SON, INC., B. F. ..... A
ADV. PG. 110
Lindly & Co., Inc. ..... B
Strandberg Engineering Lab., Inc. ..... B, C, D, E
Trumeter Co. ..... A, B, C, D, E
Veeder-Root, Inc. ..... B, C, D, E
Whitin Machine Works ..... E

COUPLING AGENTS—*Chemical*
Antara Chemicals, Div. of General Aniline & Film Corp.
Armour & Co.
Atlantic Chemical Corp.
Borne Chemical Co., Inc.
Colloids, Inc.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Eastman Chemical Products, Inc.
Miller Corp., Harry
Mona Industries, Inc.
Nopco Chemical Co.
National Aniline Div., Allied Chemical Corp.
Peerless Color Co.
Pennsalt Chemicals Corp.
Pfister Chemical Works
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN ADV. PG. 184
Putnam Chemical Corp.
Scher Bros.
Sherwin Williams Co., Pigment, Color & Chemical Div.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Chemical Works
Wica Chemicals, Inc.

COUPLINGS—*Hydraulic or Shaft*
Amplex Div., Chrysler Corp.
Bond Co., Chas.
Chain Belt Co.
Stewart-Warner Corp.
Continental Gin Co., Industrial Div.
Diamond Chain & Mfg. Co.
Dodge Mfg. Corp.
Elliott Co.
Gates Rubber Co.
Hansen Mfg. Co.
Lincoln Engineering Co.
Link-Belt Co.
Morse Chain Co.
PERFECTING SERVICE CO. ADV. PG. 129
Twin Disc Clutch Co.
Union Chain & Mfg. Co.
Waldron Corp., John
Wood's Sons Co., T. B.

COVERINGS (See also Cots)
Cork Roll ..... A
Leather Roll ..... B
Molded Phenolic Roll C
Pipe & Boiler ..... D
Rubber Roll ..... E
Seamless, Card Roll ..... F
Take-up Drum ..... G
Armstrong Cork Co. ..... A, E, G
BATSON CO., LOUIS P. ..... A, B, C, E, F, G
ADV. PG. 112
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co. ..... G
Collins Supply & Equipment Co. ..... A
Daniels, Inc., C. R. ..... D
Dayton Rubber Co. ..... E
Gates Rubber Co. ..... E, G
Griffin & Sons, Ira L. ..... E
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... E
ADV. PG. 155
Johns-Manville Corp. ..... D
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... E
MT. HOPE MACHINERY CO. ..... E
ADV. PG. 105
Mt. Hope Machinery Co. ..... E
Richardson Co. C
Schmidt Mfg. Co. ..... A, B, G
Schmidt Mfg. Co. of S. C. ..... A, B, E, G
STOWE-WOODWARD, INC. ..... E
ADV. PG. 93
Taylor Fibre Co. C
Tyer Rubber Co. ..... E
U. S. Rubber Co., Mechanical Goods Div. ..... E
Whitin Machine Works ..... A, B

COVERS—*Roll* (See Coverings or Cots)

COVERS—*Rug and Carpet*
Daniels, Inc., C. R.

CRABBING MACHINES
BIRCH BROS., INC. ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
GESSNER CO., DAVID ADV. PG. 135
Hunter Machine Co., James
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

CRADLES—*Cloth* (See Scrays & Cradles—Cloth)

CRADLES—*High Draft*
Cotton-McCauley & Co., Inc.
Dixon Corp.
Meadows Mfg. Co.
Roberts Co.
Whitin Machine Works
YOUNG MACHINE CO., F. A. ADV. PG. 78

CRANES—*Monorail* (See Hoists—Monorail)

CRANES—*Portable Stacking* (See Trucks—Elevating and Stacking)

CRANES—*Warp-Beam* (See Hoists—Warp-Beam)

CRANK ARMS (See Turnings—Wood)

CRANKSHAFTS—*Loom*
DRAPER CORP. ADV. PG. 1
Fletcher Works

CRAYONS—*Marking*
American Crayon Corp.
Livermore Corp., H. F.
Matthews Equipment Co.
JIFFY TEXTILE MARKER CO. ADV. PG. 164
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Ryerson & Son, Inc., Joseph
Scholler Bros., Inc.

CREAMS—Hand
Kali Mfg. Co.
Onyx Oil & Chemical Co.
Scholler Bros., Inc.

CREASEPROOFING COMPOUNDS
Arkansas Co.
Bryant Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
Hart Products Corp.
Metro-Atlantic, Inc.
Miller Corp., Harry
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Onyx Oil & Chemical Co.
Polymer Southern, Inc.
Quaker Chemical Products
Refined Products Corp.
ROHM & HAAS CO., INC. ADV. PG. 185
Scher Bros.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

CREASERS
Ginsberg Machine Co., Inc.

CREELS
Direct-Weaving ..... A
Jack Spool (See Spoolers—Jack)
Knitting ..... B
Slasher C
Spinning ..... D
Warper ..... E
Tufting ..... F
Allen Beam Co. ..... A, B, C, D, E
BAHNSON CO. ..... D
ADV. PG. 4
BATSON CO., LOUIS P. ..... A, C, D, E
ADV. PG. 112
E
COBBLE BROS. MACHINERY CO., INC. ..... F
ADV. PG. 91
Cotton-McCauley & Co., Inc. ..... D
DAVIS & FURBER MACHINE CO. ..... E
ADV. PG. 154
Griffin & Sons, Ira L. C
Jenkins Metal Shops ..... C, E
Kidde Textile Machinery Corp. ..... A, B, C, D, E
McBride & Co., Edw. J. ..... E
Meadows Mfg. Co. ..... D
Parks-Cramer Co. ..... D
Pneumafil Corp. ..... D
REINER, INC. ..... A, B, E
ADV. PG. 145
Roberts Co. ..... D
SACO-LOWELL SHOPS ..... C, D
ADV. PG. 68-71
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... D, E
ADV. PG. 62
Super Tufter Machinery Co. ..... F
TEXTILE SHOPS ..... G
ADV. PGS. 120, 121
West Point Foundry & Machine Co. C
YOUNG MACHINE CO., F. A. ..... D
ADV. PG. 78

CRESYLIC ACID (See Acids)

CRIMPERS—*Fiber*
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
TURBO MACHINE CO. ADV. PGS. 138, 139

CROCHETING MACHINES
MERROW MACHINE CO. ADV. PG. 134

CUPRIC & CUPROUS—*Salts*
Acetate ..... A
Chloride ..... B
Nitrate C
Sulfide ..... D
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ..... A, B, C, D
ADV. PG. 179
Jordon Co. ..... B
Union Carbide Chemicals Co., Div. Union Carbide Corp. ..... A
TENNESSEE CORP. ..... B
ADV. PG. 186

CUT METERS (See Counters—Cloth-Yardage)

CUTTERS
- **Belt-Loop** ..... A
- **Bias (See Cutters—Cloth)**
- **Card (See Jacquard Card-Cutting Machines)**
- **Cloth** ..... B
- **Fiber** C
- **Flock** ..... D
- **Glass Yarn** ..... E
- **Looper** ..... F
- **Rag (See Cutters—Flock)**
- **Ribbon (See Cutters—Cloth)**
- **Selvage-Loop** ..... G
- **Staple (See Cutters—Fiber)**
- **Strip (See Slitters—Cloth, or Cutters—Ribbon)**
- **Swatch (See Pinking Machines)**
- **Thread** ..... H
- **Top (See Cutters—Tow)**
- **Tow** I
- **Velveteen, Pile, etc.** ..... J

BATSON CO., LOUIS P. ..... H, J
ADV. PG. 112
Beck Machine Corp. ..... B
Carolina Knitting Machine Co. ..... F
Curtis & Marble Machine Co. ..... B, F, G, H, J
DRAPER CORP. ..... G, H
ADV. PG. 1
Eastman Machine Co. ..... B
Fidelity Machine Co. ..... A, H
Firsching & Son, Inc., J. A. ..... B, J
HOBBS MFG. CO. ..... B
ADV. PG. 161
Hunter Machine Co., James C
Livermore Corp., H. F. ..... H
Taylor-Stiles Co. ..... C, D, E, H, I
WARNER & SWASEY CO. I
ADV. PG. 2nd Cover
West Point Foundry & Machine Co. ..... J
Whitin Machine Works ..... C, H

CUTTING & FOLDING MACHINES
COBBLE BROS. MACHINERY CO., INC. ADV. PG. 91
Firsching & Son, Inc., J. A.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118

CUTTING MACHINES—*Stencil*

CYCLOHEXANOL (Hexalin) (See Solvents)

CYLINDER DRAINING & AIR VENTING SYSTEMS
Sarco Co., Inc.

CYLINDERS (See also Rolls)
- **Air & Hydraulic (See Power Units—Hydraulic & Pneumatic)**
- **Card** ..... A
- **Drying (See Cylinders—Slasher, and Cans—Drying)**
- **Picker (See Lags—Picker)**
- **Slasher** ..... B
- **Spinning** C
- **Spooler (See Cylinders—Spinning)**
- **Twister Cylinders and Troughs (See Cylinders—Spinning)**

CARROLL & CO., J. E. ..... B
ADV. PG. 102
COCKER MACHINE & FOUNDRY CO. ..... B
ADV. PGS. 100, 101
DAVIS & FURBER MACHINE CO. ..... A, C
ADV. PG. 154
Greenville Steel & Foundry Co. ..... B
Griffin & Sons, Ira L. ..... B
INDUSTRIAL COATINGS, INC. ..... B
ADV. PG. 167
Jenkins Metal Shops C
Paddock Co., J. C. C
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, B, C
ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ..... A
ADV. PG. 104
Roberts Co. C
SACO-LOWELL SHOPS ..... A
ADV. PG. 68-71
TEXTILE SHOPS ..... B, C
ADV. PGS. 120, 121
West Point Foundry & Machine Co. ..... B

DABBING BRUSHES (See Brushes—Dabbing)

DAMPERS—*Cloth* (See Dewing Machines)

DATA PROCESSING SYSTEMS
International Business Machines Corp.

DECAHYDRONAPHTHALENE (See Solvents)

DECALIN (See Solvents)

DECATING MACHINES
Curtis & Marble Machine Co.
GESSNER CO., DAVID ADV. PG. 135
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Van Vlaanderen Machine Co.
Verdiun Machine Corp.
Werner Machine Co.

DEFOAMING AGENTS (See Antifoaming Agents)

DEGREASING MACHINES (See Scouring Machines—Raw Stock)

DEGUMMING AGENTS
Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
Dexter Chemical Corp.
Esso Standard Oil Co.
Houghton & Co., E. F.
Kali Mfg. Co.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Philadelphia Quartz Co.
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Rumford Chemical Works
Scholler Bros., Inc.
Standard Chemical Products, Inc.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

DEGUMMING MACHINES
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

DEHUMIDIFIERS—*Air*
Air & Refrigeration Corp.
Haertel Co., Walter
Walton Laboratories, Inc.

DEIONIZERS—*Water* (See Water Treatment—Softening Equipment)

DELIQUESCENTS (See Hygroscopic Agents)

DELUSTERING AGENTS & ASSISTANTS
Amalgamated Chemical Corp.
Apex Chemical Co.
Arkansas Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Ciba Co., Inc.
Colloids, Inc.
Dexter Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
Dow Chemical Co.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Glidden Co.
Hart Products Corp.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
Mona Industries, Inc.
Monsanto Chemical Co., Organic Chemicals Div.
Morningstar-Paisley, Inc.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Scher Bros.
Scholler Bros., Inc.
Standard Chemical Products, Inc.
Stein, Hall & Co., Inc.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

DENATURED ALCOHOL (See Solvents)

DEORDORANTS (See Odor-Masking Agents)

DESIZERS—*Fabric* (See Washing Machines)

DESIZING AGENTS
American Aniline & Extract Co.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Colloids, Inc.
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Kali Mfg. Co.
Metro-Atlantic, Inc.
Mona Industries, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
North, Inc., Frank G.
Onyx Oil & Chemical Co.
Pabst Brewing Co.
Putnam Chemical Corp.
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Royce Chemical Co.
Scher Bros.
Standard Brands, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
WALLERSTEIN CO., INC. ADV. PG. 180
WOLF & CO., JACQUES ADV. PG. 188

DESPECKING MACHINES (See Burling & Despecking Machines)

DETACKING MACHINES
BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

DETECTORS—*Hole* (See Stop Motions—Knitting Machine)

DETECTORS—*Metal*
Allis-Chalmers Mfg. Co.
General Electric Co.
Radio Corp. of America
MITCHELL-BISSELL CO. ADV. PG. 77

DETECTORS—*Uniformity* (See also Testers—Yarn Eveness)
Lindly & Co., Inc.
Universal Winding Co.

DETERGENTS (See also Soaps)
Amalgamated Chemical Corp.
American Aniline & Extract Co.
American Cyanamid Co., Organic Chemicals Div.
American Sterilizer Co.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Berkshire Color & Chemical Corp.
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Calgon Co.
Ciba Co., Inc.
Colgate-Palmolive Co.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
DEWEY & ALMY OVERSEAS CO., DIV. W. R. GRACE & CO. ADV. PG. 164
Dexter Chemical Corp.
DOLGE CO., C. B. ADV. PG. 184
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Dow Chemical Co.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Geigy Chemical Corp.
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Hart Products Corp.
Houghton & Co., E. F.
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Koppers Co.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
Mona Industries, Inc.
Monsanto Chemical Co., Organic Chemicals Div.
Moretex Chemical Products, Inc.
Morningstar-Paisley, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Oakite Products, Inc.
Onyx Oil & Chemical Co.
Pennsalt Chemicals Corp.
Philadelphia Quartz Co.

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

Pioneer Salt Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Procter & Gamble Co., Industrial Specialty Sales Dept.
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Royce Chemical Co.
Rumford Chemical Works
Sandoz, Inc.
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Standard Chemical Products, Inc.
Stodghill & Co.
Swift & Co., Soap Dept.
TENNESSEE CORP. ADV. PG. 186
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Chemical Works
Victor Chemical Works
West Chemical Products, Inc.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

DETWISTING MACHINES
BIRCH BROS., INC. ADV. PG. 137
Mona Industries, Inc.
MT. HOPE MACHINERY CO. ADV. PG. 105
P&N Machine Co., Div. Peterson & Neville, Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

DEVELOPERS
Ciba Co., Inc.
Du Pont de Nemours & Co., Inc., E. I.
National Aniline Div., Allied Chemical Corp.
Putnam Chemical Corp.
Wica Chemicals, Inc.

DEWING MACHINES
Curtis & Marble Machine Co.
GESSNER CO., DAVID ADV. PG. 135
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

DEXTRIN
Anheuser-Busch, Inc.
Arabol Mfg. Co.
Armour & Co.
Clinton Corn Processing Co.
Corn Products Sales Co.
Morningstar-Paisley, Inc.
Penick & Ford, Ltd.
STALEY MFG. CO., A. E. ADV. PG. 178
Stein, Hall & Co., Inc.

DEXTROSE (See Glucose)

DIALYSERS (See Filters—Membrane, Diaphragm, Dialysers)

DIASTASE (See Desizing Agents)

DIBUTYL PHTHALATE (See Solvents)

DICHLOROETHYL ETHER (See Solvents)

DICHLOROMETHANE
Dow Chemical Co.
DU PONT DE NEMOURS & CO., INC., E. I., ELECTROCHEMICAL DEPT. ADV. PG. 181
Solvay Process Div., Allied Chemical Corp.

DIES—*Cloth Cutting*
HOBBS MFG. CO. ADV. PG. 161

DIETHANLAMINE (See Solvents)

DIETHYLENE GLYCOL (See Solvents)

DIETHYLENE GLYCOL ETHYL ETHER (See Solvents)

DIETHYLENEOXIDE (See Solvents)

DINITRILE YARNS & FIBERS (See Yarns & Fabrics)

DIOXAN (See Solvents)

DIPPERS (See Buckets & Zippers)

DIPPING MACHINES
Industrial Ovens

DIRECT DYES (See Dyes)

DISCHARGE-PRINTING AGENTS (See Reducing Agents)

DISKS—*Leather* (See Packing—Leather & Rawhide)

DISODIUM PHOSPHATE (See Sodium—Salts of —Phosphate, Dibasic)

DISPERSING AGENTS (See Detergents)

DISTRIBUTORS
Belt ..... **A**
Rake ..... **B**
Aldrich Machine Works ..... B
BATSON CO., LOUIS P. ..... A, B
ADV. PG. 112
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A
ADV. PG. 63
SACO-LOWELL SHOPS ..... A, B
ADV. PGS. 68-71
Whitin Machine Works ..... A, B

DIVIDERS—*Knitting Machine* (See Sinkers & Dividers)

DOBBY BARS (See Lags)

DOBBY CORDS
Baker Mfg. Co.
BATSON CO., LOUIS P. ADV. PG. 112
Crompton & Knowles Corp.
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Livermore Corp., H. F.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

DOBBY HEADS
Crompton & Knowles Corp.
DRAPER CORP. ADV. PG. 1
Livermore Corp., H. F.

DOCTOR BLADES
American Hard Rubber Co.
Richardson Co.
Westinghouse Electric Corp., Micarta Div.

DOFFERS (See Garnetts, also Cards)

DOLLIES
BATSON CO., LOUIS P. ADV. PG. 112
EXCEL CO., INC. ADV. PG. 165
Fairbanks Co.
FISHER MFG. CO. ADV. PG. 111
Glasco Equipment Corp.
Jenkins Metal Shops
Nutting Truck & Caster Co.
Thomas Truck & Caster Co.

DOORS (See Controls—Automatic Door & Fire Doors)

DOUBLERS
Cloth ..... **A**
Warp & Splitters ..... **B**
Yarn ..... **C**
BIRCH BROS., INC. ..... A
ADV. PG. 137
COCKER MACHINE & FOUNDRY CO. ..... B
ADV. PGS. 100, 101
Curtis & Marble Machine Co. ..... A
Cutting Room Appliances Corp. ..... A
Dinsmore Mfg. Co. ..... A
Fletcher Works C
FOSTER MACHINE CO. C
ADV. PGS. 66, 67
MENSCHNER, JOANNES—REP. BY ROBT. REINER, INC. ..... A
ADV. PG. 145
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. C
ADV. PG. 63
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
SCHWEITER LTD.—Rep. by H. J. THEILER CORP. C
ADV. PG. 80
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. C
ADV. PG. 62
Van Vlaanderen Machine Co. ..... A
Whitin Machine Works C

DOUBLER TWISTERS (See Throwing Machines)

DOUPS
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
Theiler Corp., H. J.

DRAFTERS—*Pin* (See Pin Drafters & Gill Reducers)

DRAINING (See Cylinder Draining & Air Venting Systems)

DRAWING FRAMES
Cotton ..... **A**
Worsted ..... **B**
IDEAL INDUSTRIES, INC. ..... A
ADV. PG. 90
Medley Mfg. Co. ..... A
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A
ADV. PG. 63
SACO-LOWELL SHOPS ..... A, B
ADV. PG. 68-71
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ..... B
ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... A, B
ADV. PG. 62
Whitin Machine Works ..... A

DRAWING-IN MACHINES
Barber-Colman Co.
Uster Corp.

DRIVES

Adjustable-Speed (See Transmissions—Variable Speed)
Card ..... **A**
Chain ..... **B**
Electronic ..... **C**
Enclosed-Gear (See Reducers—Speed)
Fluid (See Drives—Hydraulic)
Gear ..... **D**
Hydraulic ..... **E**
Loom ..... **F**
Portable-Power ..... **G**
Ranges ..... **H**
Slasher ..... **I**
Spinning Frame ..... **J**
V-Belt (See Belts—V)
Variable-Speed (See Transmissions—Variable-Speed)
Allis Co., The Louis ..... A
American Pulley Co. ..... A, D, I, J
Atlanta Belting Co. ..... J
Black & Decker Mfg. Co. ..... G
Cleveland Worm & Gear Co. ..... D
Cutler-Hammer, Inc. C
DAVIS & FURBER MACHINE CO. ..... A, I
ADV. PG. 154
DIEHL MFG. CO. ..... F
ADV. PG. 99
Dinsmore Mfg. Co. ..... B, D
Dodge Mfg. Corp. ..... A, B, D, J
DRAPER CORP. ..... F
ADV. PG. 1
Eaton Mfg. Co. C
Extremultus Inc. ..... A, F, H, I
FERGUSON GEAR CO. ..... B, D, F, I, J
ADV. PG. 163
Gates Rubber Co. ..... J
General Electric Co. ..... C, D, H
Griffin & Sons, Ira L. I
Liberty Machine Co., Inc. ..... B, D, E
Link-Belt Co. ..... A, B, C, D, E, F, H, I, J
Morse Cahin Co. ..... B, D
Oilgear Co. ..... E
Pfaudler Co., Div. Pfaudler Permutit, Inc. ..... B, D
Reeves Pulley Co. ..... I, J
Reliance Electric & Engineering Co. ..... A, B, C, D, F, H, I, J
Roberts Co. ..... J
ROY & SON, B. S. ..... G
ADV. PG. 167
SACO-LOWELL SHOPS ..... A, I, J
ADV. PG. 68-71
Southern States Equipment Co. ..... A
Union Chain & Mfg. Co. ..... B
Werner Machine Co. ..... B, D, H
Westinghouse Electric Corp., General Industries Div. ..... A, C, D, F, H, I, J
West Point Foundry & Machine Co. ..... B, I
Whitin Machine Works ..... B
Wood's Sons Co., T. B. ..... A, J

DROP-WIRE PINNING MACHINES
Uster Corp.

DROP WIRES (See Stop Motions)

DRUMS
- **Fibre** ..... A
- **Metal** ..... B
- **Wood** C

Allen Beam Co. C
BATSON CO., LOUIS P. ..... B, C
ADV. PG. 112
Continental Can Co., Inc. ..... A, B
Glasco Equipment Corp. ..... B
Jenkins Metal Shops ..... A, B
Liberty Machine Co., Inc. ..... B, C
McCaskie, Inc., Wm. C
NATIONAL VULCANIZED FIBRE CO. ..... A
ADV. PG. 156
SONOCO PRODUCTS CO. ..... A
ADV. PG. 54
SPAULDING FIBRE CO. ..... A
ADV. PG. 87

DRY CANS (See Cans—Drying)

DRY-CLEANING MACHINES
Fletcher Works
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

DRYER HOUSINGS—Tenter Frame
ANDREWS & GOODRICH DIV. ADV. PG. 124
DALTON SHEET METAL CO. ADV. PG. 128
FAMATEX G.M.B.H.—REP. BY ROBT. REINER INC. ADV. PG. 145
GERBER MASCHINENFABRIK—REP. BY ROBT. REINER, INC. ADV. PG. 145
Hunter Machine Co., James
INDUSTRIAL HEAT ENGINEERING CO. ADV. PG. 103
Industrial Ovens
Kenyon & Sons, Inc., D. R.
LANLY CO. ADV. PG. 108
Liberty Machine Co., Inc.
Michigan Oven Co.
NATIONAL DRYING MACHINE CO., INC. ADV. PG. 119
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
TEXTILE SHOPS ADV. PGS. 120, 121

DRYERS
- **Apron (See Dryers—Raw Stock)**
- **Backwasher** ..... A
- **Blanket (See Dryers—Piece Goods)**
- **Carbonizer** ..... B
- **Carpet (See Dryers—Piece Goods)**
- **Centrifugal (See Extractors—Centrifugal)**
- **Cloth (See Dryers—Piece Goods)**
- **High-Frequency or Dielectric** C
- **Hosiery (See Hosiery—Boarding & Preboarding Machines)**
- **Infrared Burners & Lamps** ..... D
- **Knit Goods** ..... E
- **Piece Goods** ..... F
- **Raw Stock** ..... G
- **Rayon Cake** ..... H
- **Skein** I
- **Tufted Textile (See Dryers—Piece Goods)**
- **Warp** ..... J
- **Yarn Package** ..... K

Abbott Machine Co. ..... K
Air & Refrigeration Corp. ..... D, H
Allis-Chalmers Mfg. Co. C
ANDREWS & GOODRICH DIV., Midland-Ross Corp. ..... F, G, J
ADV. PG. 124
BATSON CO., LOUIS P. I
ADV. PG. 112
BUTTERWORTH & SONS CO., H. W. ..... F, J
ADV. PGS. 114, 115
CARROLL & CO., J. E. ..... A, F
ADV. PG. 102
COCKER MACHINE & FOUNDRY CO. ..... J
ADV. PGS. 100, 101
DALTON SHEET METAL CO. ..... D, F
ADV. PG. 128
Doyle Co., J. E. ..... D
Duro-Test Corp. ..... D
FAMATEX G. M. B. H.—REP. BY ROBT. REINER INC. ADV. PG. 145
Fostoria Pressed Steel Corp. ..... D
Gaston County Dyeing Machine Co. ..... K
GERBER MASCHINENFABRIK—REP. BY ROBT. REINER INC. ADV. PG. 145
GESSNER CO., DAVID ..... F
ADV. PG. 135
Greenville Steel & Foundry Co. ..... G
Herbert Products, Inc. ..... D
Hunter Machine Co., James ..... B, E, F, G
INDUSTRIAL HEAT ENGINEERING CO. ..... B, G, J
ADV. PG. 103
Industrial Ovens ..... E, F
Kenyon & Sons, Inc., D. R. ..... B, D, E
LANLY CO. ..... A, B, D, E, F, G, H, I, J, K
ADV. PG. 108
Liberty Machine Co., Inc. ..... D, F
Lydon Bros. ..... H, I
NATIONAL DRYING MACHINE CO., INC. ..... B, F, G, H, I, K
ADV. PG. 119
Pfaudler Co., Div. Pfaudler Permutit, Inc. C
P&N Machine Co., Div. Peterson & Neville, Inc. ..... F
PROCTOR & SCHWARTZ, INC. ..... A, B, C, D, E, F, G, H, I, J, K
ADV. PG. 104
Redman Associates, Inc. ..... D
Red-Ray Mfg. Co. ..... D
Ross Engineering, J. O., Div. Midland-Ross Corp. ..... B, E, F, G, H, I, J
SARGENT'S SONS CORP., C. G. ..... A, B, G, I
ADV. PG. 84
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... A
ADV. PG. 62
Rep. by Atkinson, Haserick & Co. ..... A
Tattersall & Holdsworth's ..... F
TEXTILE SHOPS ..... F, J
ADV. PGS. 120, 121
Thermomat Co. ..... D
Triangle Equipment Co., Inc. ..... D
TUBULAR TEXTILE MACHINERY CORP. ..... E, F
ADV. PG. 118
TURBO MACHINE CO. ..... E, H, K
ADV. PGS. 138, 139
UTICA NOVELTY & MILL SPECIALTY CO. ..... E
ADV. PG. 158
Venango Engineering Co., Inc. ..... K
Verdiun Machine Corp. ..... F
West Point Foundry & Machine Co. ..... D, E, F

DUCTS
American Hard Rubber Co.
American Moistening Co.
BAHNSON CO. ADV. PG. 4
DALTON SHEET METAL CO. ADV. PG. 128
Electro Chemical Eng. & Mfg. Co.
Jenkins Metal Shops
Johns-Manville Corp.
LANLY CO. ADV. PG. 108
Michigan Oven Co.
Paddock Co., J. C.
Portland Copper & Tank Works
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SONOCO PRODUCTS CO. ADV. PG. 54
TEXTILE SHOPS ADV. PGS. 120, 121
U. S. Rubber Co., Mechanical Goods Div.

DULLING AGENTS (See Delustering Agents)

DUMBWAITERS (See Elevators)

DUSTING MACHINES
- **Carbonized Cloth** ..... A
- **Cone (See Dusting Machines—Wool & Waste)**
- **Rag (See Dusting Machines—Wool & Waste)**
- **Wool & Waste** ..... B

DAVIS & FURBER MACHINE CO. ..... B
ADV. PG. 154
Hunter Machine Co., James ..... B
Paddock Co., J. C. ..... A
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
PROCTOR & SCHWARTZ, INC. ..... B
ADV. PG. 104
SARGENT'S SONS CORP., C. G. ..... B
ADV. PG. 84
Schofield Co., Inc., Wm. ..... A, B

DYE BECKS (See Dyeing Machines—Piece Goods or Reel)

DYE CARRIERS

DYEING ASSISTANTS (See Detergents)

DYEING MACHINES
- **Beam (See Dyeing Machines—Warp)**
- **Cake (See Dyeing Machines—Package)**
- **High Pressure & Temperature** ..... A
- **Indigo** ..... B
- **Jig Type** C
- **Knit Goods (Paddle or Rotary)** ..... D
- **Package** ..... E
- **Padders** ..... F
- **Paddle (See Dyeing Machines—Reel)**
- **Piece Goods** ..... G
- **Raw Stock** ..... H
- **Reel** I
- **Skein** ..... J
- **Top** ..... K
- **Warp** L
- **Yarn (See Dyeing Machines—Package)**

Abbott Machine Co. ..... A, E, K
ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ..... K
ADV. PG. 128
American Thies Corp. ..... E, L
BIRCH BROS., INC. ..... F
ADV. PG. 137
Blickman & Co., Inc. ..... D, H, I, J
Briggs-Shaffner Co. ..... C, F, G
Burlington Engineering Co., Inc. ..... A, C, E, H, I, J, K, L
BUTTERWORTH & SONS CO., H. W. ..... C, F
ADV. PGS. 114, 115
COCKER MACHINE & FOUNDRY CO. ..... B, F, G, L
ADV. PGS. 100, 101
Gaston County Dyeing Machine Co. ..... A, D, E, G, H, K, L
GERBER MASCHINENFABRIK—REP. BY ROBT. REINER INC. ..... A, B, C, D, E, F, G, J
ADV. PG. 145
Glasco Equipment Corp. ..... G, I
Greenville Steel & Foundry Co. ..... C, F
HUNT MACHINE CO., RODNEY ..... D, F, G
ADV. PG. 95
Hunter Machine Co., James ..... A, D, F, G, I
KLAUDER WELDON GILES MACHINE CO. ..... D, H, I, J
ADV. PG. 113
Krantz Soehne—Rep. by Ernest L. Frankl ..... E, H
Liberty Machine Co., Inc. ..... A, F, G, L
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ..... C, F, G
ADV. PGS. 126, 127
P&N Machine Co., Div., Peterson & Neville, Inc. ..... A, C, D, F, G
PERKINS & SON, INC., B. F. ..... F
ADV. PG. 110
Portland Copper & Tank Works ..... G, H, I
PROCTOR & SCHWARTZ, INC. ..... D
ADV. PG. 104
RIGGS & LOMBARD CO. ..... A, B, D, F, G, H, I, K
ADV. PGS. 122, 123
TEXTILE SHOPS ..... F, G, L
ADV. PGS. 120, 121
Tower Iron Works ..... F
TURBO MACHINE CO. ..... A, E, H, J, K, L
ADV. PGS. 138, 139
Van Vlaanderen Machine Co. ..... C, F, G
Venango Engineering Co., Inc. ..... A, D, E, H, J, K
Verdiun Machine Corp. C
Werner Machine Co. ..... C, F, G, I

DYES (See also Lake Colors or Pigments)
- **Acetate** ..... A
- **Acid** ..... B
- **Alizarine** C
- **Aniline** ..... D
- **Basic** ..... E
- **Developed** ..... F
- **Direct** ..... G
- **Mordant** ..... H
- **Napthol (Azo; Azoic)** I
- **Natural** ..... J
- **Sulfur** ..... K
- **Vat** L

American Cyanamid Co., Organic Chemicals Div. ..... A, B, C, D, E, F, G, H, I, K, L
Antara Chemicals, Div. of General Aniline & Film Corp. ..... A, B, C, D, E, F, G, H, I, K, L
Arnold, Hoffman & Co. ..... B, G, I, L, F, G, H
Atlantic Chemical Corp. ..... A, B, C, D, E, F, G, H, I, L
Berkshire Color & Chemical Corp. ..... A, B, C, D, E, F, G, H, I, L
Carbic Color & Chemical Co., Inc. ..... A, B, C, D, E, F, G, H, I, J, K, L
Charlotte Chemical Laboratories, Inc. ..... A
Ciba Co., Inc. ..... A, B, C, D, E, F, G, H, K, L
Dow Chemical Co. L
Du Pont de Nemours & Co., Inc., E. I. ..... A, B, C, D, E, F, G, H, I, K, L
Eastman Chemical Products, Inc. ..... A
Geigy Chemical Corp. ..... A, B, C, D, E, F, G, H, K, L
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ..... A, B, C, D, E, F, G, H, I, K, L
ADV. PG. 187
Hilton-Davis Chemical Co. ..... B, D, E, I
Interchemical Corp. ..... A, B, C, D, G, I
Koppers Co. ..... A, B, C, D, E, F, G, H, I, L
National Aniline Div., Allied Chemical Corp. ..... A, B, C, D, E, F, G, H, I, K, L
Nyanza Color & Chemical Co., Inc. ..... A, B, C, D, E, F, G, H, I, K, L
Peerless Color Co., Inc. ..... B, C, D, F, G, H, I, L
Pfister Chemical Works I
Putnam Chemical Corp. ..... A, B, C, D, E, F, G, H, I, J, K, L
Sandoz, Inc. ..... A, B, C, D, E, F, G, I, K, L
VERONA DYESTUFFS DIV. ..... B, C, E, F, G, H, I, L
ADV. PG. 177
Young Aniline Works ..... A, B, F, G

DYESTICKS
American Hard Rubber Co.
BATSON CO., LOUIS P. ADV. PG. 112
KLAUDER WELDON GILES MACHINE CO. ADV. PG. 113

DYESTUFFS (See Dyes)

DYEWOOD EXTRACTS (See Dyes)

DYNAMOS (See Generators—AC & DC)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

EDGING MACHINES (See Sewing Machines)

EGG ALBUMIN
Berkshire Color & Chemical Corp.
Stein, Hall & Co., Inc.

ELECTROMAGNETS—*Separating* (See Separators—Magnetic)

ELEVATORS
Bobbin (See Hoists—Bobbin & Quill)
Bucket (See Conveyors—Apron Belt or Bucket)
Freight & Passenger ..... **A**
Portable ..... **B**
American Pulley Co. ..... B
Buschman Co., E. W. ..... B
Westinghouse Electric Corp., General Industries Div. . A

ELIMINATORS—*Slack-Selvage* (See also Static Neutralizers & Eliminators)
MT. HOPE MACHINERY CO. ADV. PG. 105
REINER, INC., ROBT. ADV. PG. 145
Schmidt Mfg. Co.

EMBOSSING MACHINES (See Calenders)

EMBROIDERING MACHINES
REINER, INC., ROBT. ADV. PG. 145
ZANGS A. G., CARL—REP. BY ROBT. REINER, INC. ADV. PG. 145

EMULSIFYING AGENTS & ASSISTANTS (See also Soaps & Lubricants)
Amalgamated Chemical Corp.
American Aniline & Extract Co.
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Armour & Co.
Borne Chemical Co., Inc.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Colgate-Palmolive Co.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
Dexter Chemical Corp.
Dow Chemical Co.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Emery Industries, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Glyco Products Co., Inc.
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Koppers Co.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
Mona Industries, Inc.
Monsanto Chemical Co., Organic Chemicals Div.
Moretex Chemical Products, Inc.
Morningstar-Paisley, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
North, Inc., Frank G.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Pennsalt Chemicals Corp.
Philadelphia Quartz Co.
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Scher Bros.
Seydel-Woolley & Co.
Shawinigan Resins Corp.
SIDDALL CO., INC., GEO. F. ADV. PG. 184
Sonneborn Sons, Inc., L.
STALEY MFG. CO., A. E. ADV. PG. 178
Standard Chemical Products, Inc.
Stein, Hall & Co., Inc.
Stodghill & Co.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Chemical Works
Velotron, Inc. ..... D
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

ENGINEERING SERVCES (See also Consultants)
Appraisals ..... **A**
Architectural ..... **B**
Chemical (Textile) ..... **C**
Economic Studies & Reports ..... **D**
Heating ..... **E**
Industrial ..... **F**
Mill Construction ..... **G**
Plant-Site Investigation ..... **H**
Steam Power Plants ..... **I**
ANDREWS & GOODRICH, Div. Midland-Ross Corp. ..... E
ADV. PG. 124
Barnes Textile Associates, Inc. ..... A, D
Carrier Corp. ..... E
Foster Wheeler Corp. I
Fostoria Pressed Steel Corp. ..... E
Houghton & Co., E. F. C
INDUSTRIAL HEAT ENGINEERING ..... E
ADV. PG. 103
Kuljian Corp. ..... D, G, H
Lockwood Greene Engineers, Inc. ..... A, B, C, D, E, G, H, I
Loper Co., Ralph E. ..... D, F
MAIN, INC. CHAS. T. ..... A, B, F, G, H, I
ADV. PG. 190
McPherson Co. ..... A, B, C, D, E, G, H, I
Red-Ray Mfg. Co. ..... E
ROBERT & CO., ASSOCIATES ..... A, G, I
ADV. PG. 191
SIRRINE CO., J. E. ..... A, B, C, D, E, G, H, I
ADV. PG. 193
THOMASON TEXTILE SERVICE, INC. ..... D, F
ADV. PG. 194
U. S. TESTING CO., INC. C
ADV. PG. 192
Velotron, Inc. ..... E
WERNER TEXTILE CONSULTANTS . . A, C, D, F, G, H
ADV. PG. 192
West Penn Power Co. ..... H

ENGINES—*Steam*
Allis-Chalmers Mfg. Co., Engine-Material Handling Div.

ENVELOPES—*Transparent Paper* (See Paper—Transparent)

ENZYMES (See Desizing Agents)

EPSOM SALTS (See Magnesium—Salts of Sulfate)

ETHER (See Solvents)

ETHYL ALCOHOL (See Solvents)

ETHYL BENZENE (See Solvents)

ETHYLENE DIAMINE (See Solvents)

ETHYLENE DICHLORIDE (See Solvents)

ETHYLENE GLYCOL (See Solvents)

EVAPORATORS—*Caustic Soda Recovery*
Pfaudler Co., Div. Pfaudler Permutit, Inc.
Sims Co.

EXHAUSTERS (See Fans—Exhaust & Ventilating)

EXAMINING MACHINES (See Hosiery Examining Forms or Measuring Machines)

EXPANDERS—*Cloth*
BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
FAMATEX G. M. B. H.—Rep. by ROBT. REINER INC. ADV. PG. 145
Hunter Machine Co., James
JENKINS SONS, M. W. ADV. PG. 154
Liberty Machine Co., Inc.
MENSCHNER, JOANNES—REP. BY ROBT. REINER, INC. ADV. PG. 145
MT. HOPE MACHINERY CO. ADV. PG. 105
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Van Vlaanderen Machine Co.
Verdiun Machine Corp.

***EXTINGUISHERS—Portable* (Fire)**
Ansul Chemical Co.
Fyr-Fyter Co.

EXTRACTORS
Centrifugal ..... **A**
Compression ..... **B**
Pressure ..... **C**
Vacuum ..... **D**
BIRCH BROS., INC. ..... C, D
ADV. PG. 137
Burlington Engineering Co., Inc. ..... D
CAROLINA KNITTING MACHINE CO. ..... A
ADV. PG. 144
DeLaval Separator Co. ..... A
FAMATEX G. M. B. H.—REP. BY ROBERT REINER . . D
ADV. PG. 145
Fletcher Works ..... A
Gaston County Dyeing Machine Co. ..... A, C, D
GESSNER CO., DAVID ..... B, D
ADV. PG. 135
Hunter Machine Co., James ..... B
Krantz Soehne—Rep. by Ernest L. Frankl ..... A
PROCTOR & SCHWARTZ, INC. ..... B
ADV. PG. 104
RIGGS & LOMBARD CO. ..... C, D
ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. ..... A
ADV. PG. 84
SMITH-DRUM DIV., TURBO MACHINE CO. ..... A, C
ADV. PGS. 138, 139
TUBULAR TEXTILE MACHINERY CORP. ..... B, C
ADV. PG. 118
Van Vlaanderen Machine Co. ..... A, D
TURBO MACHINE CO. ..... A, C
ADV. PGS. 138, 139

EYES—*Pot* (See Pot Eyes, or Guides—Thread)

FABRICS—*Mechanical* (See Cloth—Mechanical, or Blankets—Endless)

FACTORS—*Textile*
Bankers Trust Co.
Caesar & Co., H. A.
Commercial Factors Corp.
Crompton-Richmond
Dommerich & Co., L. F.
First National Bank of Boston
Heller, Walter E.
Iselin & Co., Wm.
Iselin-Jefferson Financial Co.
Maguire & Co., J. P.
Meinhard & Co., Inc.
Mill Factors Corp.
Rusch & Co.
Talcott, Inc., James
Textile Banking Co.
Trust Co. of Georgia

FALLERS—*Gill*
Holdsworth Mfg. Co., Inc.
Main & Sons, Robt. A.
SANT' ANDREA NOVARA—REP. BY ERNEST L. FRANKL ADV. PG. 88
SOUTHERN TEXTILE WORKS ADV. PG. 164

FANS
Centrifugal ..... **A**
Exhaust & Ventilating ..... **B**
Pressure ..... **C**
Propeller ..... **D**
Aldrich Machine Works ..... B
American Air Filter Co. ..... A, B, D
American Coolair Corp. ..... B, C, D
BAHNSON CO. ..... B, C, D
ADV. PG. 4
Buffalo Forge Co. ..... A, B, C, D
Chelsea Fan & Blower Co. ..... A, B, C, D
Clarage Fan Co. ..... A, B, C, D
Dayton Electric Mfg. Co. ..... B
DIEHL MFG. CO. ..... B
ADV. PG. 99
Hartzell Propeller Fan Co., Div., Castle Hill Corp. ..... A, B, C, D
International Engineering, Inc. ..... B, C, D
Jenkins Metal Shops ..... A, B
Lehigh Fan & Blower Div., Fuller Co. ..... A
NATIONAL DRYING MACHINE CO., INC. ..... A
ADV. PG. 119
Redman Associates, Inc. ..... A, B, D
Robbins & Meyers, Inc. ..... A, B, C, D
SACO-LOWELL SHOPS ..... B
ADV. PG. 68-71
Sturtevant Div., Westinghouse Electric Corp. . . A, B, C
Trane Co. ..... A, B, D
Westinghouse Electric Corp., General Industries Div. ..... A, B
Wing Mfg. Co., L. J. ..... B, C, D

FASTENERS
Belt & Tape ..... **A**
Bolts, Nuts, Pins, Screws, Pins, etc. ..... **B**
Acme Steel Co. ..... B
Atlanta Belting Co. ..... A
Bristol Co. ..... B
Clipper Belt Lacer Co. ..... A
Jenkins Metal Shops ..... B
Livermore Corp., H. F. ..... A
Republic Steel Corp. ..... A, D, E
Ryerson & Son, Inc., Joseph ..... B
Schmidt Mfg. Co. of S. C. ..... A
Standard Pressed Steel Co. ..... B
Ton-Tex Corp. ..... A
Torrington Co. ..... B

FATTY ACIDS (See Acids—Fatty)

FATTY—*Acid Esters*
Amalgamated Chemical Corp.
Colloids, Inc.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Emery Industries, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Glyco Products Co., Inc.
Harchem Div., Wallace & Tiernan, Inc.
Hercules Powder Co.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Onyx Oil & Chemical Co.
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Quaker Chemical Products
Scher Bros.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.

FATTY ALCOHOLS
Archer-Daniels-Midland Co.
Du Pont de Nemours & Co., Inc., E. I.
Harchem Div., Wallace & Tiernan, Inc.
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Quaker Chemical Products

FATTY-ALCOHOL SULFATES
Arkansas Co.
Colloids, Inc.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
Moretex Chemicals Products, Inc.
Nopco Chemical Co.
Onyx Oil & Chemical Co.
Pioneer Salt Co.
Procter & Gamble Co., Industrial Specialty Sales
Putnam Chemical Corp.
Quaker Chemical Products
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Union Carbide Chemicals Co., Div. Union Carbide Corp.

FEEDERS
Blending ..... A
Card ..... B
Chemical C
Continuous Roll ..... D
Dryer (See Feeders—Raw Stock)
Duster, Garnett & Lumper Willow ..... E
Fearnaught Picker (See Feeders—Picker)
Hopper (See Feeder—Raw Stock)
Intermediate Wool Card ..... F
Opener ..... G
Picker ..... H
Raw Stock I
Washer (See Feeders—Raw Stock)
Aldrich Machine Works ..... A, G, H, I
American Water Softener Co. C
Carolina Machinery Co. ..... A, G
CURLATOR CORP. ..... A
ADV. PG. 65
Curtis & Marble Machine Co. ..... A, H
DAVIS & FURBER MACHINE CO. ..... A, B, E, F, G, H, I
ADV. PG. 154
HARWOOD & SON, GEO. S. ..... A, B, E, G, H, I
ADV. PG. 168
Hunter, Inc., James ..... A, B
Hunter Machine Co., James ..... A, B, E, I
Jenkins Metal Shops ..... A, B, G, H
Kirkman & Dixon Machinery Co. ..... A, G, H, I
MT. HOPE MACHINERY CO. ..... D
ADV. PG. 105
NATIONAL DRYING MACHINE CO., INC. ..... D, I
ADV. PG. 119
Permutit Co., Div. Pfaudler Permutit, Inc. C
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, B, F, G, H, I
ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ..... A, B, E, F, G, H, I
ADV. PG. 104
SACO-LOWELL SHOPS ..... A, B, G, H
ADV. PG. 68-71
SARGENT'S SONS CORP., C. G. ..... G, H, I
ADV. PG. 84
Schofield Co., Inc., Wm. ..... F
Whitin Machine Works ..... A, B, E, F, G, H

FEELER MOTIONS—*Loom*
Crompton & Knowles Corp.
DRAPER CORP. ADV. PG. 1

FELTING MACHINES (See also Mills—Fulling)
Hunter Machine Co., James
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

FELTS—*Mechanical*
Albany Felt Co.
AMERICAN FELT CO. ADV. PG. 166
Armstrong Cork Co.
BATSON CO., LOUIS P. ADV. PG. 112
BEST & CO., EDW. H. ADV. PG. 169
Booth Felt Co., Inc.
Felters Co.
WESTERN FELT WORKS ADV. PG. 2

FENCING—*Chain Link or Iron Picket*
Anchor Fence Div., Anchor Post Products, Inc.
Atlantic Steel Co.
CYCLONE FENCE DEPT., U. S. STEEL CORP. ADV. PG. 153
Continental Steel Co.
Stewart Iron Works

FERROUS & FERRIC—*Salts of*
Chloride ..... A
Sulfate ..... B
Dow Chemical Co. ..... A
Du Pont de Nemours & Co., Inc. ..... B
Jordon Co. ..... A
Pennsalt Chemicals Corp. ..... A
Stauffer Chemical Co. ..... B
TENNESSEE CORP. ..... B
ADV. PG. 186

FIBERS (See Yarns & Fibers)

FIBRE—*Vulcanized*
Continental Diamond Fibre Corp.
ENGINEERED PLASTICS, INC. ADV. PG. 74
Federal Fibre Co.
Jenkins Metal Shops
Matthews Equipment Co.
NATIONAL VULCANIZED FIBRE CO. ADV. PG. 156
Schmidt Mfg. Co. of S. C.
SPAULDING FIBRE CO. ADV. PG. 87

FILLERS (See under individual headings; Calcium —Salts of—Carbonate, China Clay, Talc, etc.)

FILLET WINDER (See Winders—Fillet)

FILLETS—*Emery*
Ashworth Bros., Inc.
HOWARD BROS. ADV. PG. 73
ROY & SON, B. S. ADV. PG. 167

FILLING-STRAIGHTENING MACHINES & DEVICES
BIRCH BROS., INC. ADV. PG. 137
MT. HOPE MACHINERY CO. ADV. PG. 105

FILTERS
Air ..... A
Edge ..... B
Membrane, Diaphragm, Dialysers C
Pressure or Gravity ..... D
Water (See Purifiers—Water)
Air & Refrigeration Corp. ..... A
Aldrich Machine Works ..... A
American Air Filter Co. ..... A
AMERICAN FELT CO. ..... A, B, C, D
ADV. PG. 166
American Water Softener Co. ..... D
BAHNSON CO. ..... A
ADV. PG. 4
Brosites Machine Co. ..... C, D
Cochrane Corp. ..... D
Durion Co., Inc., Dept. T-W ..... D
Gaston County Dyeing Machine Co. ..... A
Goodyear Tire & Rubber Co. ..... A
Graver Water Conditioning Co. ..... D
Hercules Filter Corp. ..... D
Jenkins Metal Shops ..... A
Lehigh Fan & Blower Div., Fuller Co. ..... A, D
Lincoln Engineering Co. ..... A
Norgren Co., C. A. ..... A
PERFECTING SERVICE CO. ..... A
ADV. PG. 129
Permutit Co., Div. Pfaudler Permutit, Inc. ..... D
SACO-LOWELL SHOPS ..... A
ADV. PG. 68-71
Shriver & Co. ..... D

FINANCING (See Factors)

FINISHING AGENTS (See under individual headings; Dextrin, Gums, Starches, Lubricants, etc.)

FINISHING MACHINES (See under individual headings; Calenders, Dyeing Machines, etc., depending upon process involved)

FIRE DOORS
Richards-Wilcox Mfg. Co.

FIRE PROTECTION SYSTEMS (See Sprinkler Systems)

FIRE RESISTANTS (See Flame-Retarding Agents)

FITTINGS
Brass Pipe (See Fittings—Copper & Brass, or Pipe—Brass & Copper)
Conduit (See Conduit & Fittings—Electrical)
Copper & Brass ..... A
Corrosion-Resisting ..... B
Hard Rubber (See Pipe—Hard Rubber)
Lead Lined C
Malleable-Iron & Steel ..... D
Rubber Lined (See Pipe—Rubber Lined)
Stainless Steel (See Fittings—Corrosion-Resisting)
Steel Pipe (See Fittings—Malleable-Iron & Steel)
Tubing (See Fittings—Copper & Brass)
ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ..... D
ADV. PG. 128
American Hard Rubber Co. ..... B
Cooper Alloy Corp. ..... B
Crane Co. ..... B, D
Crucible Steel Co. of America ..... B
Lunkenheimer Co. ..... A
National Lead Co. C
Potts Co., Horace T., Speedline Fittings Div. ..... B
Ryerson & Son, Inc., Joseph ..... B, D
Saran Lined Pipe Co. ..... B

FIXING AGENTS
Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Charlotte Chemical Laboratories, Inc.
Ciba Co., Inc.
Dexter Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
Geigy Chemical Corp.
Glasco Equipment Corp.
Hart Products Corp.
Moretex Chemical Products, Inc.
National Aniline Div., Allied Chemical Corp.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Scher Bros.
Standard Chemical Products, Inc.

FLAME-RETARDING AGENTS
Apex Chemical Co.
Arkansas Co.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Dow Chemical Co.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Hooker Electrochemical Co., Chemicals Div.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Miller Corp., Harry
Monsanto Chemical Co., Organic Chemicals Div.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Pfister Chemical Works
Philadelphia Quartz Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
Rumford Chemical Works
Scher Bros.
Scholler Bros., Inc.
Selig Co.
Stauffer Chemical Co.
Victor Chemical Works

FLOCKING MACHINES (See Cutters—Flock)

FLOOR CLEANING, SANDING, SCRUBBING & POLISHING MACHINES (See also Cleaners—Portable Industrial Floor Vacuum)
American Floor Machine Co.
Black & Decker Mfg. Co.
FINNELL SYSTEM, INC. ADV. PG. 136
General Floorcraft, Inc.
Guardian Chemical Co.

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

Hillyard Chemical Co.
Kent Co.
Multi-Clean Products, Inc.
Selig Co.
Tennant Co., G. H.
West Chemical Products, Inc.

FLOOR-CLEANING MATERIALS
Antara Chemicals, Div. of General Aniline & Film Corp.
Armour & Co.
Armstrong Cork Co.
Berkshire Color & Chemical Corp.
Colgate-Palmolive Co.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
DOLGE CO., C. B. ADV. PG. 184
FINNELL SYSTEMS, INC. ADV. PG. 136
Guardian Chemical Co.
Hillyard Chemical Co.
Horn Co., Inc.
JENKINS SONS, M. W. ADV. PG. 154
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Kent Co.
Miller Corp., Harry
Multi-Clean Products, Inc.
Oakite Products, Inc.
Seydel-Woolley & Co.
Steelcote Mfg. Co.
Tennant Co., G. H.
West Chemical Products, Inc.

FLOOR-CONSTRUCTION MATERIALS
Acme Steel Co.
Barrett Div., Allied Chemical & Dye Corp.
Electro Chemical Eng. & Mfg. Co.
General Latex & Chemical Corp.
Horn Co., Inc.
West Chemical Products, Inc.

FLOOR-PROTECTIVE MATERIALS
American-Marietta Co.
Arco Co.
Armstrong Cork Co.
Barrett Div., Allied Chemical & Dye Corp.
DOLGE CO., C. B. ADV. PG. 184
Du Pont de Nemours & Co., Inc., E. I.
Electro Chemical Eng. & Mfg. Co.
Guardian Chemical Co.
Hillyard Chemical Co.
Horn Co., Inc.
Minnesota Paints, Inc.
Multi-Clean Products, Inc.
Morris Textile Equipment Corp.
Steelcote Mfg. Co.
Tennant Co., G. H.
West Chemical Products, Inc.

FLOOR-SAFETY MATERIALS
Atlantic Steel Co.
DOLGE CO., C. B. ADV. PG. 184
Du Pont de Nemours & Co., Inc., E. I.
Eagle-Picher Co.
Hillyard Chemical Co.
Horn Co., Inc.
Minnesota Mining & Mfg. Co.
Multi-Clean Products, Inc.
Steelcote Mfg. Co.
Tennant Co., G. H.
West Chemical Products, Inc.

FLOORING—*Maple*
MAPLE FLOORING MFRS. ASSN. ADV. PG. 152

FLY FRAMES (See Roving Frames)

FLYER ATTACHMENTS
YOUNG MACHINE CO., F. A. ADV. PG. 78

FLYERS
Cotton ..... **A**
Man-Made Fibers, Silk ..... **B**
Worsted ..... **C**
Collins Supply & Equipment Co. ..... B
GASTONIA ROLLER, FLYER & SPINDLE CO. ..... A, B, C
ADV. PG. 157
IDEAL MACHINE SHOPS ..... A
ADV. PG. 86
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, B, C
ADV. PG. 63
SACO-LOWELL SHOPS ..... A, B, C
ADV. PGS. 68-71
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... A, C
ADV. PG. 62
Whitin Machine Works ..... A, C
YOUNG MACHINE CO., F. A. ..... A, B, C
ADV. PG. 78

FLYER SPINNING FRAMES (See Spinning Frames—Worsted)

FLY FRAMES (See Roving Frames)

FOAM RUBBER
BATSON CO., LOUIS P. ADV. PG. 112
Dayton Rubber Co.
U. S. Rubber Co.

FOG ELIMINATORS
Parks-Cramer Co.
Wing Mfg. Co., L. J.

FOLDERS
Cloth ..... **A**
Warp ..... **B**
BIRCH BROS., INC. ..... A
ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ..... A, B
ADV. PGS. 114, 115
COCKER MACHINE & FOUNDRY CO. ..... A
ADV. PGS. 100, 101
Curtis & Marble Machine Co. ..... A
DALTON SHEET METAL CO. ..... A
ADV. PG. 128
Dinsmore Mfg. Co. ..... A
GESSNER CO., DAVID ..... A
ADV. PG. 135
Hunter Machine Co., James ..... A
MENSCHNER, JOANNES—REP. BY ROBT. REINER INC. ..... A
ADV. PG. 145
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
TUBULAR TEXTILE MACHINERY CORP. ..... A
ADV. PG. 118

FORMALDEHYDE
Allied Chemical Corp., Nitrogen Div.
Borden Chemical Co., Div. Borden Co.
Celanese Corp. of America
Du Pont de Nemours & Co., Inc., E. I.
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Reichhold Chemicals, Inc.
Scher Bros.

FORMERS—*Cordage* (See Cordage Machines)

FORMIC ACID (See Acids)

FORMS (See Hosiery Forms)

FOUNTAINS (See Coolers—Water)

FULL-FASHIONED HOSIERY KNITTING MACHINES (See Knitting Machines—Full-Fashioned)

FULLING (See also under individual headings; Penetrants, Wetting Agents, etc.)
Agents ..... **A**
Assistants ..... **B**
Antara Chemicals, Div. of General Aniline & Film Corp. ..... A, B
Apex Chemical Co. ..... B
Arkansas Co. ..... A, B
Berkshire Color & Chemical Corp. ..... A, B
Ciba Co., Inc. ..... B
Colgate-Palmolive Co. ..... A, B
CONCORD CHEMICAL CO. ..... A, B
ADV. PG. 176
Du Pont de Nemours & Co., Inc., E. I. ..... A, B
Kali Mfg. Co. ..... A
Laurel Soap Mfg. Co. ..... A, B
Metro-Atlantic, Inc. ..... A, B
Miller Corp., Harry ..... A
Nopco Chemical Co. ..... A, B
Nyanza Color & Chemical Co., Inc. ..... A, B
Oakite Products, Inc ..... A
Pioneer Salt Co. ..... A, B
Procter & Gamble Co., Industrial Specialty Sales Dept. ..... A, B
Quaker Chemical Products ..... A, B
Seydel-Woolley & Co. ..... A, B
Standard Chemical Products, Inc. ..... A, B
Union Carbide Chemicals Co., Div. Union Carbide Corp. ..... B
Wica Chemicals, Inc. ..... A, B

FULLING MACHINES (See Mills—Fulling)

FULLING OILS (See Fulling Agents)

FUMARIC ACID (See Acids)

FUNGICIDES (See Mildew Preventives)

FUR—*Shuttle*
BATSON CO., LOUIS P. ADV. PG. 112
Matthews Equipment Co.
MORRIS FUR CO. ADV. PG. 169
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
SNOWISS FUR CO., B. ADV. PG. 162

FURFURAL (See Solvents)

FURFURYL ALCOHOL (See Solvents)

FUSES
Bussmann Mfg. Div., McGraw-Edison Co.
Trico Fuse Mfg. Co.

GARNETT WIRE (See Card Clothing)

GARNETTING MACHINES
Hunter, Inc., James
Hunter Machine Co., James
PLATT BROS., (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104

GAS-LEAK DETECTING COMPOUNDS
Pennsalt Chemicals Corp.

GASKETS (See Packing—Rubber & Fibrous Sheet)

GASSING MACHINES (See Singeing Machines)

GATES—*Fence* (See Fencing)

GAUGES (See Instruments of all types)

GEARMOTORS (See Motors—Gear)

GEARS
Coiler (See Gears—Metal Gears & Pinions)
Draft (See Gears—Metal Gears & Pinions)
Metal Gears & Pinions ..... **A**
Non-metallic Gears & Pinions ..... **B**
Allis Co., The Louis ..... A
Amplex Div., Chrysler Corp. ..... A
BATSON CO., LOUIS P. ..... A, B
ADV. PG. 112
Bond Co., Chas. ..... A, B
Continental Diamond Fibre Corp. ..... B
DRAPER CORP. ..... A
ADV. PG. 1
FERGUSON GEAR CO. ..... A, B
ADV. PG. 163
Fletcher Works ..... B
GASTONIA ROLLER, FLYER & SPINDLE CO. ..... A
ADV. PG. 157
IDEAL MACHINE SHOPS ..... A
ADV. PG. 86
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... A
ADV. PG. 155
Kluttz Machine & Foundry Co. ..... A
Medley Mfg. Co. ..... A
MILTON MACHINE WORKS ..... A
ADV. PG. 159
NATIONAL VULCANIZED FIBRE CO. ..... B
ADV. PG. 156
Richardson Co. ..... B
SACO-LOWELL SHOPS ..... A, B
ADV. PGS. 68-71
Salisbury Iron Works, Inc. ..... A
Schmidt Mfg. Co. ..... A, B
Schmidt Mfg. Co. of S. C. ..... A, B
Southern States Equipment Co. ..... B
Verdiun Machine Corp. ..... A, B
Werner Machine Co. ..... A, B
PERKINS & SON, INC. B. F. ..... A
ADV. PG. 110
Westinghouse Electric Corp., General Industries Div. ..... A, B
Westinghouse Electric Corp., Micarta Div. ..... B
West Point Foundry & Machine Co. ..... B
Whitin Machine Works ..... A, B
YOUNG MACHINE CO., F. A. ..... A, B
ADV. PG. 78

GELATIN
Bryant Chemical Corp.
Colloids, Inc.
Delany & Co., Inc.
Milligan & Higgins Corp.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Scher Bros.

GENERATORS
- **AC & DC** ... A
- **Chlorine** ... B
- **Inert Gas** ... C
- **Infrared Heat (See Dryers—Infrared)**
- **Stand-by** ... D
- **Steam (See Boilers—Steam)**

Allis Co., The Louis ... A
Allis-Chalmers Mfg. Co. ... A
Allis-Chalmers Mfg. Co., Engine-Material Handling Div. ... D
Century Electric Co. ... A
Elliott Co. ... A
General Electric Co. ... A, C
Pfaudler Co., Div. Pfaudler Permutit, Inc. ... B
Reliance Electric & Engineering Co. ... A
Westinghouse Electric Corp., General Industries Div. ... A, D
West Point Foundry & Machine Co. ... A
Worthington Corp. ... A, D

GERMICIDES (See Antiseptics)

GIGS
GESSNER CO., DAVID ADV. PG. 135
Jenkins Metal Shops
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

GILL BOXES
Holdsworth Mfg. Co., Inc.
Jenkins Metal Shops
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
WARNER & SWASEY CO. ADV. PG. 2nd Cover

GILL REDUCERS (See Pin Drafters and Gill Reducers)

GLASS YARNS & FIBERS (See Yarns & Fibers)

GLASSES
- **Magnifying & Pick** ... A
- **Safety** ... B

Bausch & Lomb Optical Co. ... A
Edroy Products Co. ... A
General Scientific Equipment Co. ... A, B
Suter Co., Alfred ... A

GLAUBER'S SALT (See Sodium—Salts of—Sulfate)

GLAZING COMPOUNDS
American Hard Rubber Co.
CONCORD CHEMICAL CO. ADV. PG. 176
Horn Co., Inc.
Steelcote Mfg. Co.

GLOVES & APRONS—*Rubber*
BEST & CO., EDW. H. ADV. PG. 169
General Scientific Equipment Co.
Johns-Manville Corp.
U. S. Rubber Co., Mechanical Goods Div.

GLUCOSE
Clinton Corn Processing Co.
Penick & Ford, Ltd.

GLUES (See Adhesives)

GLYCERIN (Glycerol)
Armour & Co.
Colloids, Inc.
Dow Chemical Co.
Drew Co., E. F., Textile Chemicals Dept.
Harshaw Chemical Co.
Nopco Chemical Co.
Reichhold Chemicals, Inc.
Shell Oil Co.

GOVERNORS—*Pump*
Mason-Neilan, Div. of Worthington Corp.

GREASES—*Lubricating* (See Lubrication—Oils & Greases)

GRIDS—*Cards*
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Jenkins Metal Shops
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PGS. 68-71
Whitin Machine Works

GRINDERS
- **Card, Garnett and Napper** ... A
- **Drum** ... B
- **Indigo** ... C
- **Picker** ... D
- **Roll** ... E
- **Shear** ... F
- **Traverse** ... G

Ashworth Bros., Inc. ... A
BOOTH CO., BENJAMIN ... A
ADV. PG. 75
DAVIS & FURBER MACHINE CO. ... A, G
ADV. PG. 154
Dronsfield Bros., Ltd. ... A
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ... G
ADV. PG. 63
RIGGS & LOMBARD CO. ... E
ADV. PGS. 122, 123
ROY & SON, B. S. ... A, B, C, D, E, F, G
ADV. PG. 167
SACO-LOWELL SHOPS ... A, B, G
ADV. PGS. 68-71
Whitin Machine Works ... A, G
Schofield Co., Inc., Wm. ... D
Whitin Machine Works ... A, G

GUIDERS—*Cloth*
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
Erhardt & Leimer—Rep. by Ernest L. Frankl
FAMATEX G.M.B.H.—Rep. by ROBT. REINER INC. ADV. PG. 145
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER INC. ADV. PG. 145
Guider Roll & Service Co.
GUIDER SPECIALTY CO. ADV. PG. 102
Hunter Machine Co., James
Intercontinental Dynamics Corp.
Liberty Machine Co., Inc.
MT. HOPE MACHINERY CO. ADV. PG. 105
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SOUTHERN TEXTILE WORKS ADV. PG. 164

GUIDES
- **Cloth** ... A
- **Fiber-Knife & Steel** ... B
- **Pigtail (See Guides—Thread)**
- **Roving & Sliver** ... C
- **Selvage Uncurling** ... D
- **Spooler (See Guides—Thread)**
- **Tenter-Clip Rail** ... E
- **Thread** ... F
- **Yarn (See Guides—Thread)**

AMERICAN LAVA CORP., TITANIA DIV. ... C, F
ADV. PG. 97
Armstrong Cork Co. ... A
Askania Regulator Co. ... A, E
BATSON CO., LOUIS P. ... A, B, C, F
ADV. PG. 112
BIRCH BROS., INC. ... A, D
ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ... A, D, E
ADV. PGS. 114, 115
Collins Supply & Equipment Co. ... F
Dinsmore Mfg. Co. ... F
FAMATEX G.M.B.H.—Rep. by ROBT. REINER INC. ... E, F
ADV. PG. 145
Fife Mfg. Co. ... A, E
Firsching & Son, Inc., J. A. ... A
GASTONIA ROLLER, FLYER & SPINDLE CO. ... C
ADV. PG. 157
Gladwin Plastics Inc. ... C
Guider Roll & Service Co. ... D
GUIDER SPECIALTY CO. ... A
ADV. PG. 102
Heany Industrial Ceramics Corp. ... F
Hunter Machine Co., James ... A, D, E
INDUSTRIAL SAPPHIRE CO. ... F
ADV. PG. 159
Intercontinental Dynamics Corp. ... B, E
IVES CO., LOYAL J. ... F
ADV. PG. 142
Lambertville Ceramic & Mfg. Co. ... F
Lazenby Co., F. A. ... F
MARSHALL & WILLIAMS CORP. ... E
ADV. PGS. 132, 133
Matthews Equipment Co. ... C
MITCHELL-BISSELL CO. ... C, F
ADV. PG. 77
MT. HOPE MACHINERY CO. ... A, D, E
ADV. PG. 105
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ... C, F
ADV. PG. 63
REINER, INC. ... F
ADV. PG. 145
Richardson Co. ... E
Roberts Co. ... C
Royersford Needle Works, Inc. ... F
SACO-LOWELL SHOPS ... C, F
ADV. PGS. 68-71
Schmidt Mfg. Co. ... B
SOUTHERN TEXTILE WORKS ... A, E
ADV. PG. 164
SPAULDING FIBRE CO. ... B, D, E
ADV. PG. 87
Torrington Co. ... F
Walton & Lonsbury ... F
Whitin Machine Works ... C, F

GUMS
- **Arabic** ... A
- **British** ... B
- **Carob** ... C
- **Cellulose** ... D
- **Karaya** ... E
- **Senegal** ... F
- **Synthetic** ... G
- **Tragacanth** ... H
- **Vegetable** ... I

Alco Oil & Chemical Co. ... G
Apex Chemical Co. ... B
Bryant Chemical Corp. ... A, B, C, D, E, F, G, H, I
Corn Products Sales Co. ... B
Dow Chemical Co. ... G
Goodrich Chemical Co., B. F. ... G
Hercules Powder Co. ... D
Kelco Co. ... E
Moretex Chemical Products, Inc. ... G
Morningstar-Paisley, Inc. ... A, B, C, E, F, H, I
Onyx Oil & Chemical Co. ... E
Penick & Ford, Ltd. ... B, I
POLYMER INDUSTRIES ... C, I
ADV. PG. 184
POLYMER SOUTHERN, INC. ... I
ADV. PG. 184
Scher Bros. ... A, H
Seydel-Woolley & Co. ... G
Shawinigan Resins Corp. ... G
STALEY MFG. CO., A. E. ... B, I
ADV. PG. 178
Stein, Hall & Co., Inc. ... A, B, C, E, H, I
Stodghill & Co. ... D, I
Wica Chemicals, Inc. ... G
WYANDOTTE CHEMICALS CORP. ... D
ADV. PGS. 172, 173

GYPSUM (See Calcium—Salts of—Sulfate)

GYRATORS—*Cotton*
Aldrich Machine Works

HACK STANDS
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
DAVIS & FURBER MACHINE CO. ADV. PG. 154

HAIR-PROCESSING MACHINERY
CURLATOR CORP. ADV. PG. 65
Curtis & Marble Machine Co.
DAVIS & FURBER MACHINE CO. ADV. PG. 154
HARWOOD & SON, GEO. S. ADV. PG. 168
Hunter Machine Co., James
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SARGENT'S SONS CORP., C. G. ADV. PG. 84

HAMPERS (See Baskets—Canvas)

HANGERS—*Shaft* (See Blocks—Hanger & Pillow)

HANK CLOCKS (See Counters—Yarn-Yardage)

HANK COUNTERS (See Counters—Yarn-Yardage)

HARNESS ADJUSTERS
BATSON CO., LOUIS P. ADV. PG. 112
Crompton & Knowles Corp.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

HARNESS FRAMES & HEDDLES
ANDREWS CO. ADV. PG. 156
BATSON CO., LOUIS P. ADV. PG. 112
DRAPER CORP. ADV. PG. 1
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
Steel Heddle Mfg. Co.

HEADS—*Balling* (See Balling Heads)

HEADS—*Beam* (See Beams & Beam Heads)

HEADS—*Cylinder*
Jenkins Metal Shops
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
West Point Foundry & Machine Co.
Whitin Machine Works

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

HEADS—*Dobby* (See Dobby Heads)

HEADS—*Jacquard* (See Jacquard Heads)

HEADS—*Spray* (See Nozzles—Spray)

HEADS—*Worsted Balling* (See Balling Heads)

HEAT EXCHANGERS

ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ADV. PG. 128
Babcock & Wilcox Co.
Burlington Engineering Co., Inc.
Carrier Corp.
Cleaver-Brooks Co.
Cochrane Corp.
Corning Glass Works
Crucible Steel Co. of America
DeLaval Separator Co.
Foster Wheeler Corp.
Gaston County Dyeing Machine Co.
Greenville Steel & Foundry Co.
LANLY CO. ADV. PG. 108
LUDELL MFG. CO. ADV. PG. 53
McQuay, Inc.
Pfaudler Co., Div. Pfaudler Permutit, Inc.
Sims Co.
Trane Co.
Tranter Mfg., Inc.
Westinghouse Electric Corp., General Industries Div.

HEATERS (See also Dryers)

Feed Water . . . A
Gas-Fired . . . B
High-Frequency (See Dryers—High-Frequency or Infrared)
Unit . . . C
Water . . . D

American Water Softener Co. . . . A
Buffalo Forge Co. . . . C
Carrier Corp. . . . B, C
Clarage Fan Co. . . . C
Cochrane Corp. . . . A
Cutler-Hammer, Inc. . . . D
Foster Wheeler Corp. . . . A
General Electric Co. . . . C
Graver Water Conditioning Co. . . . A
Herbert Products, Inc. . . . B
INDUSTRIAL HEAT ENGINEERING CO. . . . B, C ADV. PG. 103
Johnson Corp. . . . A, D
LANLY CO. . . . B ADV. PG. 108
LUDELL MFG. CO. . . . D ADV. PG. 53
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. . . . B ADV. PGS. 126, 127
McQuay, Inc. . . . C
Michigan Oven Co. . . . B, C
Permutit Co., Div. Pfaudler Permutit, Inc. . . . D
Red-Ray Mfg. Co. . . . B
Ross Engineering, J. O., Div. Midland-Ross Corp. . . . B
Sims Co. . . . A, D
Sturtevant Div., Westinghouse Electric Corp. . . . B, C
Trane Co. . . . B, C
Velotron, Inc. . . . C
WIEGAND CO., EDWIN L. . . . C ADV. PG. 130
Wing Mfg. Co., L. J. . . . B, C
Worthington Corp. . . . A

HEDDLE-REPAIR

Halton's Sons, Thomas
Steel Heddle Mfg. Co.

HEDDLES (See Harness Frames & Heddles)

HEMMING MACHINES (See Sewing Machines)

HEXALIN (See Solvents)

HOISTS

Bobbin & Quill . . . A
Chain Block (See Hoists—Hand Chain)
Electric Cable . . . B
Electric Chain . . . C
Hand Chain . . . D
Monorail . . . E
Pneumatic or Hydraulic . . . F
Warp-Beam . . . G

American Monorail Co. . . . E
American Pulley Co. . . . E
Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp. . . . B, C, D, E
Cleveland Crane & Engineering Co. . . . E
Gardner-Denver Co. . . . E
Ingersoll-Rand Co. . . . F
Jenkins Metal Shops . . . G
Louden Machinery Co. . . . E
Page Steel & Wire Div., American Chain & Cable Co. . . . B, C, D, E
Robbins & Meyers, Inc. . . . B, C, D, E
Ryerson & Son, Inc., Joseph . . . B, C, D, E, F
Smith Co., S. Morgan . . . B, C, E
Terrell Machine Co., Inc. . . . A
Wright Hoist Div., American Chain & Cable Co., Inc. . . . B, C, D, E
Yale & Towne Mfg. Co. . . . B, C, D, E

HOLDERS

Bobbin . . . A
Cone (See Holders—Bobbin)
Cop (See Holders—Bobbin)
Rayon-Cake . . . B
Ring (See Rings—Spinning & Twister)

American Hard Rubber Co. . . . B
BATSON CO., LOUIS P. . . . A, B ADV. PG. 112
Cloverleaf Freeland Corp. . . . B
DRAPER CORP. . . . A ADV. PG. 1
ECLIPSE MACHINE DIV., BENDIX AVIATION CORP. . . . A ADV. PG. 96
Hunter, Inc., James . . . A
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. . . . A ADV. PG. 155
Kidde Textile Machinery Corp. . . . A
League Mfg. Co., G. F. . . . B
Livermore Corp., H. F. . . . A
Matthews Equipment Co. . . . A
McBride & Co., Edw. J. . . . A
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. . . . A ADV. PG. 63
Roberts Co. . . . A
Whitin Machine Works . . . A
YOUNG MACHINE CO., F. A. . . . A ADV. PG. 78

HOMOGENIZERS (See Also Mills—Colloid)

American Marsh Pumps, Inc.
DeLaval Separator Co.
Pfaudler Co., Div. Pfaudler Permutit, Inc.

HOODS—*Fume & Vapor*

COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
Electro Chemical Eng. & Mfg. Co.
Johns-Manville Corp.
Ross Engineering, J. O., Div. Midland-Ross Corp.
TEXTILE SHOPS ADV. PGS. 120, 121
West Point Foundry & Machine Co.

HOOKS

Harness, Reed & Shuttle . . . A
Mending . . . B
Sinker (See Sinkers & Dividers)
Welt . . . C

BATSON CO., LOUIS P. . . . A ADV. PG. 112
Collins Supply & Equipment Co. . . . A
Greensboro Loom Reed Co., Inc. . . . A
IVES CO., LOYAL T. . . . C ADV. PG. 142
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. . . . A ADV. PG. 155
Livermore Corp., H. F. . . . A
Royersford Needle Works, Inc. . . . B, C
Schmidt Mfg. Co. . . . A
Torrington Co. . . . B

HOPPERS—*Bobbin*

Paddock Co., J. C.
DRAPER CORP. ADV. PG. 1
Jenkins Metal Shops

HOSE—*Air & Water*

American Hard Rubber Co.
Atlanta Belting Co.
BATSON CO., LOUIS P. ADV. PG. 112
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co.
Gates Rubber Co.
Lincoln Engineering Co.
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc.
Republic Rubber Div., Lee Rubber & Tire Corp.
Schmidt Mfg. Co. of S. C.
U. S. Rubber Co., Mechanical Goods Div.

HOSIERY BOARDING & PREBOARDING MACHINES

CAROLINA KNITTING MACHINE CO. ADV. PG. 144
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
TURBO MACHINE CO. ADV. PGS. 138, 139

HOSIERY FORMS

Drying . . . A
Examining . . . B

CAROLINA KNITTING MACHINE CO. . . . A, B ADV. PG. 144
Richardson Co. . . . B
Southern Textile Machinery Co. . . . B
TEXTILE MACHINE WORKS . . . B ADV. PGS. 140, 141
TURBO MACHINE CO. . . . A ADV. PGS. 138, 139

HUMIDIFIERS—*Room* (See also Air Conditioners)

Air-Perme-Ator Mfg. Co.
American Moistening Co.
Armstrong Machine Works
BAHNSON CO. ADV. PG. 4
Parks-Cramer Co.
Ross Engineering, J. O., Div. Midland-Ross Corp.
Spraying Systems Co.
Walton Laboratories, Inc.

HUMIDIFYING CABINETS (See Cabinets—Humidifying)

HYDRAULIC POWER UNITS (See Power Units—Hydraulic & Pneumatic)

HYDROCHLORIC ACID (See Acids)

HYDROGEN PEROXIDE

Becco Chemical Div., Food Machinery & Chemical Corp.
Columbia-Southern Chemical Corp.
DU PONT DE NEMOURS & CO., INC., E. I., ELECTROCHEMICALS DEPT. ADV. PG. 181
Pennsalt Chemicals Corp.
Scher Bros.
Seydel-Woolley & Co.
Shell Chemical Corp.
Solvay Process Div., Allied Chemical Corp.
Westvaco Chemical Div., Food Machinery & Chem. Corp.

HYDROMETERS (See Instruments)

HYGROMETERS (See Controls—Humidity, or Instruments—Humidity, Indicating & Recording, or Instruments—Wet-Bulb Hygrometers)

HYDROSCOPIC AGENTS

Allied Chemical Corp., Nitrogen Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Bryant Chemical Corp.
Dow Chemical Co.
EMKAY CHEMICAL CO. ADV. PG. 180
Hercules Powder Co.
Laurel Soap Mfg. Co.
Miller Corp., Harry
Mona Industries, Inc.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Putnam Chemical Corp.
Seydel-Woolley & Co.
Southern Sizing Co.
Stein, Hall & Co., Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

IMPREGNATING MACHINES

BIRCH BROS., INC. ADV. PG. 137
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ADV. PG. 145
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER, INC. ADV. PG. 145
GESSNER CO., DAVID ADV. PG. 135
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
Industrial Ovens
LANLY CO. ADV. PG. 108
Liberty Machine Co., Inc.
Pfaudler Co., Div. Pfaudler Permutit, Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
Waldron Corp., John

INDICATORS (See Instruments of All Types)

INFRARED BURNERS (See Dryers—Infrared)

INHIBITORS—*Gas-Fading*

Arkansas Co.
Bryant Chemical Corp.
EMKAY CHEMICAL CO. ADV. PG. 180
Hart Products Corp.
Metro-Atlantic, Inc.
Mona Industries, Inc.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Putnam Chemical Corp.
Refined Products Corp.

Richmond Oil Soap & Chemical Co.
Scher Bros.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Violet Products, Inc.
Wica Chemicals, Inc.

INKS & MARKING COMPOUNDS

JIFFY TEXTILE MARKER CO. ADV. PG. 164
NISSEN CO., JOHN P. JR. ADV. PG. 150
TEXTILE ADJUNCTS CORP. ADV. PG. 182

INSECTICIDES

DOLGE CO., C. B. ADV. PG. 184
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Esso Standard Oil Co.
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Gulf Oil Co.
Hercules Powder Co.
Nopco Chemical Co.
Sinclair Refining Co.
Solvay Process Div., Allied Chemical Corp.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
U. S. Rubber Co., Naugatuck Chem. Div.
Warren Refining & Chem. Co.
West Chemical Products, Inc.

INSPECTION MACHINES

BIRCH BROS., INC. ADV. PG. 137
Collins Bros. Machine Co.
Curtis & Marble Machine Co.
Cutting Room Appliances Corp.
Dinsmore Mfg. Co.
Herrmas Div., Curtis & Marble Machine Co.
HOBBS MFG. CO. ADV. PG. 161
Liberty Machine Co., Inc.
Lindly & Co., Inc.
Marvel Specialty Co.
McBride & Co., Edw. J.
REINER, INC., ROBT. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Southern Textile Machinery Corp.
Super-Tufter Machinery Co.
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ADV. PG. 158
Van Vlaanderen Machine Co.
Verdiun Machine Corp.
Werner Machine Co.

INSTRUMENTS

Color Measurement ..... **A**
Gas or Air Meter ..... **B**
Humidity, Indicating & Recording ..... **C**
Hydrometer ..... **D**
Liquid-Density & Proportioning ..... **E**
Liquid-Flow, Indicating & Recording ..... **F**
Liquid-Level, Indicating & Recording ..... **G**
Machine-Stoppage Recorder ..... **H**
Moisture-Content Gauge ..... **I**
Needle Gauge ..... **J**
Pile Gauge ..... **K**
pH Indicator ..... **L**
Pressure & Vacuum, Indicating & Recording ..... **M**
Static Indicator ..... **N**
Steam-Flow Meter ..... **O**
Temperature, Indicating & Recording ..... **P**
Testing (See Testers)
Vibration Measurement ..... **Q**
Wet-Bulb Hygrometer ..... **R**

Analytical Measurements, Inc. L
Anemostat Corp. of America ..... H, N, P
Bailey Meter Co. ..... B, F, G, L, M, O, P
Barber-Colman Co. ..... C, P
Bausch & Lomb Optical Co. ..... A
Beckman Scientific Instruments Div. L
Bristol Co. ..... B, C, E, F, G, H, I, L, M, O, P, R
CUSTOM SCIENTIFIC INSTRUMENT, INC. ..... N
ADV. PG. 98
Foxboro Co. ..... B, C, D, E, F, G, I, L, M, O, P, R
Friez Instrument Div. C
Gaston County Dyeing Machine Co. ..... F, M, P
General Electric Co. ..... A, M, P, Q
General Radio Co. ..... Q
General Scientific Equipment Co. ..... C, D, P, R
Hagan Chemicals & Controls, Inc. ..... B, E, F, G, L, M, O, P
Helicoid Gage Div., American Chain & Cable Co. ..... M
Herbert Products, Inc. ..... P
Hunter, Inc., James I
Hunter Machine Co., James ..... C, I
JOHNSON SERVICE CO. ..... C, M, N, P
ADV. PG. 151
Kearny Mfg. Co., Inc. ..... C, I
Leeds & Northrup Co. ..... C, F, G, L, M, P
Lindly & Co., Inc. ..... H
Liquidometer Corp. ..... G
Macbeth Corp. ..... A, E, L
Manning, Maxwell & Moore, Inc. ..... F, G, M, P
Mason-Neilan, Div. of Worthington Corp. ..... C, F, G, M, O, P
Minneapolis-Honeywell Regulator Co., Industrial Div. ..... C, F, G, I, L, M, O, P, R
Moisture Register Co. I
Mona Industries, Inc. I
Neptune Meter Co. ..... B, D, F
Parks-Cramer Co. ..... C, P
Permutit Co., Div. Pfaudler Permutit, Inc. ..... B
Powers Regulator Co. ..... C, M, P, R
Precision Thermometer & Instrument Co. ..... C, D, E, M, P, R
Pyrometer Instrument Co. ..... P
Redman Associates, Inc. ..... C, I, P, R
Rockwell Mfg. Co. ..... B, F
Sarco Co., Inc. ..... P
Stewart-Warner Corp. ..... M
Strandberg Engineering Lab., Inc. I
Velotron, Inc. ..... P
Wallace & Tiernan, Inc. ..... M
Walton Laboratories, Inc. ..... C, D, R
Weston Instruments, Div. Daystrom, Inc. ..... C, I, M, P, R
Yarnall-Waring Co. ..... G

INSULATION

Building Construction ..... **A**
Boiler (See Covering—Pipe & Boiler)
Pipe (See Covering—Pipe & Boiler)
Vibration ..... **B**

AMERICAN FELT CO. ..... A, B
ADV. PG. 166
Armstrong Cork Co. ..... A, B
Barrett Div., Allied Chemical & Dye Corp. ..... A
Barry Controls, Inc. ..... B
BATSON CO., LOUIS P. ..... A, B
ADV. PG. 112
Canton Containers ..... A
Clark-Cutler-McDermott Co. ..... B
Dow Chemical Co. ..... A
Eagle-Picher Co. ..... A
Felters Co. ..... B
Goodyear Tire & Rubber Co. ..... B
Johns-Manville Corp. ..... A, B
Keaskey & Mattison Co. ..... A, B
Korfund Co. ..... B
L. O. F. Glass Fibers Co. ..... A
Lord Mfg. Co. ..... B
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... B
Pittsburgh Corning Corp. ..... A
Tennessee Prod. & Chemical Corp. ..... A
U. S. Rubber Co., Mechanical Goods Div. ..... B
WESTERN FELT WORKS ..... B
ADV. PG. 2

ION EXCHANGERS & EQUIPMENT (See Water Treatment)

IRISH MOSS (Carragheen)

Stein, Hall & Co., Inc.
WOLF & CO., JACQUES ADV. PG. 188

IRON OXIDE

Du Pont de Nemours & Co., Inc., E. I.
Eastman Chemical Products, Inc.

IRONS—*Hosiery Knitting*

Kaumagraph Co.

ISOLATORS—(See Insulation—Vibration)

JACKS—Knitting Machines (See Sinkers & Dividers)

JACQUARD CARD-CUTTING MACHINES

Baxter Co.

JACQUARD CARD-LACING MACHINES

Baxter Co.

JACQUARD CARDS

Baxter Co.
Crompton & Knowles Corp.
Halton's Sons, Thomas

JACQUARD COMBER BOARDS

BATSON CO., LOUIS P. ADV. PG. 112
Baxter Co.
Crompton & Knowles Corp.
Halton's Sons, Thomas

JACQUARD DESIGN SHEETS

Baxter Co.

JACQUARD HARNESS (See Harness & Heddles)

JACQUARD HEADS & EQUIPMENT

BATSON CO., LOUIS P. ADV. PG. 112
Baxter Co.
Crompton & Knowles Corp.
Halton's Sons, Thomas

JAPAN WAX (See Waxes—Japan)

J-BOXES

BUTTERWORTH & SONS CO., H. W.—ADV. PGS. 114, 115
COBBLE BROS. MACHINERY CO., INC. ADV. PG. 91
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
DALTON SHEET METAL CO. ADV. PG. 128
Greenville Steel & Foundry Co.
HUNT MACHINE CO., RODNEY ADV. PG. 95
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
MT. HOPE MACHINERY CO. ADV. PG. 105
NATIONAL DRYING MACHINE CO., INC. ADV. PG. 119
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
TEXTILE SHOPS ADV. PGS. 120, 121
Van Vlaanderen Machine Co.
Verdiun Machine Corp.
Waldron Corp., John

JIGS (See Dyeing Machines—Jigs)

JOINTS

Expansion ..... **A**
Revolving ..... **B**

Barco Mfg. Co. ..... A, B
Chiksan Co. ..... B
PERFECTING SERVICE CO. ..... B
ADV. PG. 129
ROTHERM ENGINEERING CO., INC. ..... A, B
ADV. PG. 160
Sealol Corp. ..... B
Smith Co., S. Morgan ..... B
U. S. Rubber Co., Mechanical Goods Div. ..... A
Yarnall-Waring Co. ..... A

JUTE-PROCESSING MACHINES (See Cordage Machines)

KAOLIN (See China Clay)

KETTLES

Corrosion-Resisting ..... **A**
Dye (See Kettles—Corrosion-Resisting, or Dyeing Machines—Piece Goods, Reel)
Mixing ..... **B**
Size ..... **C**

Burlington Engineering Co., Inc. ..... A, B, C
CARROLL & CO., J. E. ..... A, B, C
ADV. PG. 102
Durion Co., Inc., Dept. T-W ..... A
Electro Chemical Eng. & Mfg. Co. ..... A
Gaston County Dyeing Machine Co. ..... A, B, D, E
Greenville Steel & Foundry Co. ..... B, C
Griffin & Sons, Ira L. C
HUNT MACHINE CO., RODNEY ..... B
ADV. PG. 95
Hunter Machine Co., James ..... A, B
INDUSTRIAL HEAT ENGINEERING CO. ..... A
ADV. PG. 103
Jenkins Metal Shops ..... A, B, C
Pfaudler Co., Div. Pfaudler Permutit, Inc. ..... A, B
P&N Machine Co., Div. Peterson & Neville, Inc. ..... A, B
Portland Copper & Tank Works ..... A, B, C
RIGGS & LOMBARD CO. ..... A, B, C
ADV. PGS. 122, 123
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. C
ADV. PG. 62
TEXTILE SHOPS ..... A, B, C
ADV. PGS. 120, 121
Tower Iron Works ..... A, B, C
Venango Engineering Co., Inc. ..... A, B, C, D
Werner Machine Co. ..... A, B

KIER-BOILING AGENTS & ASSISTANTS

Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Armour & Co.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Colloids, Inc.
Dexter Chemical Corp.
Dow Chemical Co.
Drew Co., E. F., Textile Chemicals Dept.

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
Geigy Chemical Corp.
Hart Products Corp.
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Mona Industries, Inc.
Moretex Chemical Products, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Oakite Products, Inc.
Onyx Oil & Chemical Co.
Pfister Chemical Works
Philadelphia Quartz Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Rumford Chemical Works
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Standard Chemical Products, Inc.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

KIERS—*Bleaching*
ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ADV. PG. 128
Burlington Engineering Co., Inc.
Jenkins Metal Shops
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62

KNITTING MACHINE ATTACHMENTS
Ainslie Knitting Machine Co.
CAROLINA KNITTING MACHINE CO. ADV. PG. 144
Crawford Co., Inc., H. E.
Fidelitly Machine Co.
Lamb Knitting Machine Co.
Scott & Williams, Inc.
SOUTHERN MILL EQUIPMENT CORP. ADV. PG. 144
SPEIZMAN CO., MORRIS ADV. PG. 144
Stop-Motion Devices Corp.

KNITTING MACHINES
Circular ..... A
Circular Hosiery ..... B
Flat C
Full-Fashioned Hosiery ..... D
Full-Fashioned Sweaters ..... E
Hand ..... F
Jacquard ..... G
Links & Links Circular ..... H
Links & Links Flat I
Milanese ..... J
Netting ..... K
Raschel L
Ribbers ..... M
Seamless ..... N
Tricot ..... O
Ainslie Knitting Machine Co. ..... A, C
Bentley Knitting Machy. Org. ..... A, B, C, H, N
CAROLINA KNITTING MACHINE CO. ..... N
ADV. PG. 144
Crane Mfg. Co. ..... A
Crawford Co., Inc., H. E. ..... A, B, N
Fidelity Machine Co. ..... A, B, M, N
Kidde Textile Machinery Corp. ..... J, K, L, O
Lamb Knitting Machine Co. ..... C, F
Leighton Machine Co. ..... A
LIBA G.M.B.H.—Rep. by ROBT. REINER, INC. ..... O
ADV. PG. 145
ORDNANCE GAUGE CO. ..... A
ADV. PGS. 82, 83
Queens Machine Corp. ..... C, F, G, I, L
REINER, INC. ..... C, D, E, L, O
ADV. PG. 145
Scott & Williams, Inc. ..... A, B, I, N
SPEIZMAN CO., MORRIS ..... N
ADV. PG. 144
SUPREME KNITTING MACHINE CO., INC. ..... A, M
ADV. PG. 143
TEXTILE MACHINE WORKS ..... B, D, E, O
ADV. PGS. 140, 141
Tompkins Bros. Co. ..... A
Whitin Machine Works ..... O
Wildman Jacquard Co. ..... A, B, E, G, H, M

KNIVES—*Cloth* (See Cutters—Cloth)

KNIVES—*Machine*
BIRCH BROS., INC. ADV. PG. 137
Firsching & Son, Inc., J. A.
HOBBS MFG. CO. ADV. PG. 161
Jenkins Metal Shops
Taylor-Stiles Co.

KNOCK-OVER BITS (See Sinkers & Dividers)

KNOTTERS
Barber-Colman Co.
Fidelity Machine Co.
Kidde Textile Machinery Corp.
Mill Devices Div., A. B. Carter, Inc.

LABELING MACHINES
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

LABELS
Box ..... A
Foil ..... B
Gummed (See Labels—Box)
Pressure Sensitive C
Printed-Cloth ..... D
Woven ..... E
Continental Can Co., Inc. ..... B
Fenton Label Co. ..... C, D
Kaumagraph Co. ..... A, B, C, E
Milprint, Inc. ..... A, B
Nashua Corp. ..... A
Package Products Co. ..... A, B, C
U. S. Rubber Co., Mechanical Goods Div. C

LABORATORY EQUIPMENT (See Testers)

LABORATORIES—*Testing*
SOUTH FLORIDA TEST SERVICE ADV. PG. 194
THOMASON TEXTILE SERVICE, INC. ADV. PG. 195
U. S. TESTING CO., INC. ADV. PG. 192

LACE BOBBIN OVENS (See Ovens—Lace Bobbin)

LACE-MACHINE PARTS
IVES CO., LOYAL J. ADV. PG. 142

LACE MACHINES
Kidde Textile Machinery Corp.
REINER INC., ROBT. ADV. PG. 145

LACTIC ACID (See Acids)

LADDERS (See Scaffolds & Ladders)

LAGS—*Picker*
Aldrich Machine Works
Bagshaw Co., W. H.
Main & Sons, Robt. A.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SACO-LOWELL SHOPS ADV. PGS. 68-71
Smith Textile Apron Co., Inc.
Todd-Long Picker Apron Co., Inc.
Whitin Machine Works

LAKE COLORS
Atlantic Chemical Corp.
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ADV. PG. 187
National Aniline Div., Allied Chemical Corp.
Putnam Chemical Corp.
Sherwin Williams Co., Pigment, Color & Chemical Div.

LAMPS—*Color-Matching or Daylight* (See also Lighting Fixtures & Lamps)
Duro-Test Corp.
General Electric Co., Large Lamp Dept.
Luxo Lamp Co.
Macbeth Corp.
Ultra Violet Products, Inc.
Westinghouse Electric Corp., General Industries Div.

LAMPS—*Infrared* (See Dryers—Infrared)

LAPPERS
Sliver ..... A
Ribbon ..... B
Hunter Machine Co., James ..... A
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, B
ADV. PG. 63
SACO-LOWELL SHOPS ..... A, B
ADV. PGS. 68-71
Whitin Machine Works ..... A, B

LAPPINGS
BEST & CO., EDW. H. ADV. PG. 169

LATCH NEEDLES (See Needles—Latch)

LATEX APPLICATORS
DALTON SHEET METAL CO. ADV. PG. 128

LATEX
Alco Oil & Chemical Co
American Aniline & Extract Co.
Colton Chemical Co.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
General Latex & Chemical Corp.
Goodrich Chemical Co., B. F.
Koppers Co.
Morningstar-Paisley, Inc.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Reichhold Chemicals, Inc.
Shawinigan Resins Corp.
UBS Chemical Co.
U. S. Rubber Co., Naugatuck Chem. Div.
Wica Chemicals, Inc.

LAYERS—*Rope* (See Cordage Machines)

LEAD—*Salts of*
Oxide (Litharge) ..... A
Sulfate ..... B
Eagle-Picher Co. ..... A, B
National Lead Co. ..... A

LEASE RODS (See Rods—Lease)

LEASING MACHINES (See also Tying-in Machines—Warp)
BATSON CO., LOUIS P. ADV. PG. 112
Uster Corp.

LEATHERS—*Binder* (See Straps—Loom)

LEATHERS—*Textile* (See Aprons—Rub, or Aprons—Long Draft, or Covering—Leather Roll, Pickers—Loom, or Straps—Loom, or Tape Condensers)

LET-OFFS—*Warp & Cloth*
BIRCH BROS., INC. ADV. PG. 137
Crompton & Knowles Corp.
Curtis & Marble Machine Co.
DRAPER CORP. ADV. PG. 1
Hunter Machine Co., James
Industrial Ovens
Kidde Textile Machinery Corp.
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
MT. HOPE MACHINERY CO. ADV. PG. 105
P&N Machine Co., Div. Peterson & Neville, Inc.
REINER, INC. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Southern Loom Development Co.
Waldron Corp., John

LEVELING AGENTS (See Detergents)

LIFTERS—*Warp-Beam* (See Hoists—Warp-Beam)

LICKERS-IN
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PGS. 68-71

LIGHTING FIXTURES & LAMPS—*Fluorescent & Incandescent*
American Safety Table Co.
Benjamin Electric Mfg. Co.
Duro-Test Corp.
Fostoria Pressed Steel Corp.
General Electric Co., Large Lamp Dept.
Luxo Lamp Co.
Westinghouse Electric Corp., General Industries Div.
Wheeler Reflector Co.

LINERS—*Basket, Box, Case, Drum*
BATSON CO., LOUIS P. ADV. PG. 112
Kennedy Carliner & Bag Co.

LINGOES—*Jacquard*
BATSON CO., LOUIS P. ADV. PG. 112
Baxter Co.
Halton's Sons, Thomas
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

LININGS—*Tank* (Corrosion-Resisting)
American Hard Rubber Co.
Barrett Div., Allied Chemical & Dye Corp.
Dow Chemical Co.
Electro Chemical Eng. & Mfg. Co.
Electric Storage Battery Co.
Goodyear Tire & Rubber Co.
INDUSTRIAL COATINGS, INC. ADV. PG. 167
Manhattan Rubber Div., Raybestos-Manhattan Rubber Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Saran Lined Pipe Co.
Steelcote Mfg. Co.
U. S. Rubber Co., Mechanical Goods Div.

LINSEED OIL (See Oil—Natural)

LITHOPONE
Glidden Co.
Sherwin Williams Co., Pigment, Color & Chemical Div.

LOADERS—*Kier* (See Pilers—Kier)

LOADING AGENTS (See under individual headings; Calcium—salts of, China Clay, Talc, etc.)

LOCKERS—*Storage & Clothes Cabinets*
Bennet Rose Co.
Paddock Co., J. C.

LOCUST-BEAN GUM (See Gums—Carob)

LOOMS
Axminster . . . . . A
Chenille . . . . . B
Cotton C
Hand . . . . . D
Jacquard (See Jacquard Heads)
Miscellaneous (Asbestos, Coir & Sisal, Paper Felt, etc.) . . . . . E
Narrow-Fabric . . . . . F
Needle . . . . . G
Plush & Velvet . . . . . H
Rayon I
Ribbon (See Looms—Narrow-Fabric)
Shuttleless (See Looms—Narrow Fabric)
Silk (See Looms—Rayon)
Terry . . . . . J
Wilton . . . . . K
Wire L
Woolen & Worsted . . . . . M
Woven-Label . . . . . N
Crompton & Knowles Corp. A, B, C, E, F, G, H, I, J, K, M, N
DeLaval Separator Co. . . . . A, B, C, D, E, G, I, M
DRAPER CORP. . . . . C, F, I, J, M
ADV. PG. 1
Fletcher Works . . . . . F, N
Hunter Machine Co., James . . . . . G
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. . . . . A, F
ADV. PG. 63
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. C
ADV. PG. 62
WARNER & SWASEY CO. . . . . E, L, M
ADV. PG. 2nd Cover

LOOM PARTS—*Metallic & Non-Metallic*
Armstrong Cork Co.
BATSON CO., LOUIS P. ADV. PG. 112
Crompton & Knowles Corp.
Dayton Rubber Co.
DeLaval Separator Co.
Denman Textile Rubber Co.
DRAPER CORP. ADV. PG. 1
ENGINEERED PLASTICS, INC. ADV. PG. 74
Hardwood Mfg. Co., Inc.
Jenkins Metal Shops
League Mfg. Co., G. F.
Livermore Corp., H. F.
National Plastics, Inc.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
Southern Loom Development Co.
SPAULDING FIBRE CO. ADV. PG. 87
Tatem Mfg. Co.

LOOM REPAIR & REBUILDING
BATSON CO., LOUIS P. ADV. PG. 112
DRAPER CORP. ADV. PG. 1
Fletcher Works
Livermore Corp., H. F.
Yeomans, Inc.

LOOM SIGNALING DEVICES
BATSON CO., LOUIS P. ADV. PG. 112
Crompton & Knowles Corp.
DRAPER CORP. ADV. PG. 1
League Mfg. Co., G. F.

LOOP-CUTTING MACHINES (See Cutters)

LOOPERS
Hosiery . . . . . A
Knitted Fabric . . . . . B
Sewing C
Tufting . . . . . D
BIRCH BROS., INC. C
ADV. PG. 137
Broad St. Machine Co. C
COBBLE BROS. MACHINERY CO., INC. . . . . D
ADV. PG. 91
Dinsmore Mfg. Co. C
SOUTHERN MACHINE CO. . . . . D
ADV. PG. 162
Southern Textile Machinery Co. . . . . A, B
Super-Tufter Machinery Co. . . . . D
Torrington Co. C

LUBRICANTS
Fiber & Yarn . . . . . A
Oils & Greases . . . . . B
Alemite Div., Stewart-Warner Corp. . . . . B
Amalgamated Chemical Corp. . . . . A
American Aniline & Extract Co. . . . . A
Antara Chemicals, Div. of General Aniline & Film Corp. . . . . A
Apex Chemical Co. . . . . A
Arkansas Co. . . . . A
Atlantic Refining Co. . . . . A, B
Borne Chemical Co., Inc. . . . . A, B
Burkart Schier Chemical Co. . . . . A
Dixon Crucible Co. . . . . A, B
Dow Chemical Co. . . . . A, B
Dow Corning Corp. . . . . A, B
Drew Co., E. F., Textile Chemicals Dept. . . . . A
Du Pont de Nemours & Co., Inc., E. I. . . . . A
Emery Industries, Inc. . . . . A
EMKAY CHEMICAL CO. . . . . A
ADV. PG. 180
Esso Standard Oil Co. . . . . A, B
GARLAND MFG. CO. . . . . B
ADV. PG. 152
Gulf Oil Co. . . . . B
Hart Products Corp. . . . . A
Houghton & Co., E. F. . . . . A, B
Kali Mfg. Co. . . . . A
Kearny Mfg. Co., Inc. . . . . A
Laurel Soap Mfg. Co. . . . . A
Lubriplate Div., Fiske Bro. Refining Co. . . . . B
Magnus Chemical Co., Inc. . . . . B
Miller Corp., Harry . . . . . A, B
Mona Industries, Inc. . . . . A
Moretex Chemical Products, Inc. . . . . A
Morningstar-Paisley, Inc. . . . . A
N. Y. & N. J. Lubricant Co. . . . . B
Nopco Chemical Co. . . . . A, B
Onyx Oil & Chemical Co. . . . . A
POLYMER SOUTHERN, INC. . . . . A
ADV. PG. 184
Procter & Gamble Co., Industrial Specialty Sales Dept. . . . . A
Putnam Chemical Corp. . . . . A
Pure Oil Co. . . . . A, B
Richmond Oil Soap & Chemical Co. . . . . A, B
ROY & SON, B. S. . . . . B
ADV. PG. 167
Scher Bros. . . . . A
Scholler Bros., Inc. . . . . A
Seydel-Woolley & Co. . . . . A
Shell Oil Co. . . . . B
Sinclair Refining Co. . . . . B
Sonneborn Sons, Inc., L. . . . . A, B
Southern Sizing Co. . . . . A
Standard Chemical Products, Inc. . . . . A
Sun Oil Co. . . . . A, B
TEXAS CO. . . . . B
ADV. PG. 4th Cover
Union Carbide Chemicals Co., Div. Union Carbide Corp. . . . . A, B
Valvoline Oil Co., Div. Ashland Oil & Refining Co. . . . . B
Warren Refining & Chem. Co. . . . . B
Wica Chemicals, Inc. . . . . A

LUBRICATORS
Machine . . . . . A
Stock . . . . . B
Flat Card Chain C
Acme Mfg. & Gasket Co. . . . . B
Alemite Div., Stewart-Warner Corp. . . . . A
Bijur Lubricating Corp. . . . . A, B
Borne Chemical Co., Inc. . . . . B
EAGLE MFG. CO. . . . . A
ADV. PG. 148
HARWOOD & SON, GEO. S. . . . . B
ADV. PG. 168
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. . . . . A
ADV. PG. 155
JARRELL-BULLARD CO. C
ADV. PG. 162
Lincoln Engineering Co. . . . . A
Lunkenheimer Co. . . . . A
M-B Products Co. . . . . A
Miller Corp., Harry . . . . . A, B, C
Norgren Co., C. A. . . . . A, B
Oil Rite Corp. . . . . A, B, C
Powell Co., Wm. . . . . A
Trico Fuse Mfg. Co. . . . . A, C
Whitin Machine Works . . . . . A

LUMPERS—*Wool*
DAVIS & FURBER MACHINE CO. ADV. PG. 154

LUSTERING MACHINES
Curtis & Marble Machine Co.
GESSNER CO., DAVID ADV. PG. 135
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Scher Bros.

LUSTRANTS & RELUSTRANTS
Apex Chemical Co.
Bryant Chemical Corp.
Dow Chemical Co.
EMKAY CHEMICAL CO. ADV. PG. 180
Moretex Chemical Products, Inc.
Onyx Oil & Chemical Co.
Scher Bros.
Standard Chemical Products, Inc.
Wica Chemicals, Inc.

MACHINE-SHOP EQUIPMENT & SUPPLIES
ALLEN-BRADLEY CO. ADV. PG. 3rd Cover
BATSON CO., LOUIS P. ADV. PG. 112
Black & Decker Mfg. Co.
Fairgate Rule Co.
Johnson & Bassett, Inc.
Toledo Pipe Threading Machine Co.
WARNER & SWASEY CO. ADV. PG. 2nd Cover

MAGNESIUM—*Salts of*
Chloride . . . . . A
Silicofluoride . . . . . B
Sulfate (Epsom Salts) C
Antara Chemicals, Div. of General Aniline & Film Corp. B
Dow Chemical Co. . . . . A, C
Du Pont de Nemours & Co., Inc., E. I. C

MAGNESIUM SULFATE (See Magnesium—Salts of)

MAGNETIC SEPARATORS (See Separators—Magnetic)

MAGNETS
Doffer Truck . . . . . A
Permanent Non-Electric . . . . . B
Spiked Apron C
BATSON CO., LOUIS P. . . . . A, B, C
ADV. PG. 112
EXCEL CO., INC. . . . . A
ADV. PG. 165
Homer Mfg. Div., Ohio Electric Mfg. Co. . . . . A, B
Crucible Steel Co. of America . . . . . B
Eriez Mfg. Co. . . . . B, C
General Scientific Equipment Co. . . . . B
Jenkins Metal Shops . . . . . B

MAGNIFIERS (See Glasses—Magnifying)

MALT (See Desizing Agents)

METALLIC YARNS & FIBERS (See Yarns & Fibers)

MANGLES
BIRCH BROS., INC. ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
FAMATEX G.M.B.H.—Rep. by ROBT. REINER INC. ADV. PG. 145
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER INC. ADV. PG. 145
Greenville Steel & Foundry Co.
Hunter Machine Co., James
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Tower Iron Works
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
Werner Machine Co.

MANTLES—*Steaming* (See Decating Machines)

MARKING MACHINES (See Also Numbering Machines)
BATSON CO., LOUIS P. ADV. PG. 112
Curtis & Marble Machine Co.
Kaumagraph Co.
Markem Machine Co.

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

REINER, INC., ROBT. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Uster Corp.

MARKING DEVICES—*Dye & Bleach Resist*
JIFFY TEXTILE MARKER CO. ADV. PG. 164
NISSEN CO., JOHN P., JR. ADV. PG. 150

MATTRESS MACHINERY
Curtis & Marble Machine Co.

MEASURING MACHINES (See also Counters)
Dinsmore Mfg. Co.
BIRCH BROS., INC. ADV. PG. 137
Durant Mfg. Co.
GESSNER CO., DAVID ADV. PG. 135
Hunter Machine Co., James
Liberty Machine Co., Inc.
REINER, INC., ROBT. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Trumeter Co.
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
Werner Machine Co.

MENDING MACHINES
BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
Cutting Room Appliances Corp.
Super-Tufter Machinery Co.

MERCERIZING ASSISTANTS
Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
CONCORD CHEMICAL CO. ADV. PG. 176
Dow Chemical Co.
EMKAY CHEMICAL CO. ADV. PG. 180
Hart Products Corp.
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Mona Industries, Inc.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Pfister Chemical Works
Putnam Chemical Corp.
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
Rumford Chemical Works
Sandoz, Inc.
Scher Bros.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

MERCERIZING MACHINES
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER INC. ADV. PG. 145
Hunter Machine Co., James
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
Morrison Machine Co.
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
P&N Machine Co., Div. Peterson & Neville, Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Tower Iron Works

METAL DETECTORS (See Detectors—Metal)

METALLIZING AND METALLIZING EQUIPMENT
IDEAL MACHINE SHOPS ADV. PG. 86
Metallizing Engineering Co., Inc.

METAPHENYLENEDIAMINE (See Developers)

METERS (See Instruments or Counters)

METHANOL (See Solvents)

METHYL ALCOHOL (See Solvents)

MICROSCOPES (See Glasses—Magnifying & Pick)

MILANESE MACHINES (See Knitting Machines—Milanese)

MILDEW PREVENTIVES
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Burkart Schier Chemical Co.
Ciba Co., Inc.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Gallowhur Chemical Corp.
Interchemical Corp.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Pfister Chemical Works
Putnam Chemical Corp.
Richmond Oil Soap & Chemical Co.
Scholler Bros., Inc.
Selig Co.
Seydel-Woolley & Co.
Southern Sizing Co.
Steelcote Mfg. Co.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Chemical Works
Wica Chemicals, Inc.

MILLS
Fulling (Rotary) ..... **A**
Kicker ..... **B**
Pusher (See Mills—Kicker)
Hunter Machine Co., James ..... A, B
RIGGS & LOMBARD CO. ..... A, B
ADV. PGS. 122, 123

MINERAL OILS (See Lubricants—Oils & Greases)

MIXERS—*Dye* (See Mixers—Mechanical)

MIXERS—*Mechanical*
International Engineering, Inc.
MIXING EQUIPMENT CO. ADV. PG. 131
Pako Corp.
Venango Engineering Co., Inc.

MOIRE MACHINES (See Calenders)

MOISTENERS (See Dewing Machines or Humidifiers)

MOLD PREVENTIVES (See Mildew Preventives)

MONOETHANOLAMINE (See Solvents)

MONOETHYLAMINE (See Solvents)

MONORAILS (See Conveyors—Overhead Monorail)

MONOSODIUM PHOSPHATE (See Sodium—Salts of—Phosphate, Monobasic)

MOUNTAIN WAX (See Waxes—Natural)

MOPS—*Industrial Cleaning* (See Brushes)

MORDANT DYES (See Dyes—Mordant)

MOTIONS—*Builder* (See Roving Frames or Spinning Frames)

MORDANTS
American Cyanamid Co., Organic Chemicals Div.
Arkansas Co.
Bryant Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ADV. PG. 187
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Koppers Co.
Nyanza Color & Chemical Co., Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
WOLF & CO., JACQUES ADV. PG. 188

MOTE KNIVES
Jenkins Metal Shops
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PGS. 68-71

MOTHPROOFING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Barrett Div., Allied Chemical & Dye Corp.
Dow Chemical Co.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Esso Standard Oil Co.
Geigy Chemical Corp.
Koppers Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Richmond Oil Soap & Chemical Co.
Selig Co.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
West Chemical Products, Inc.

MOTORS
Air or Hydraulic ..... **A**
Explosion-Proof ..... **B**
Gear ..... **C**
Lintproof ..... **D**
Loom ..... **E**
Sewing Machine ..... **F**
Spinning Frame ..... **G**
Splashproof ..... **H**
Totally-Enclosed Valve-Operating (See Valves—Motor-Operated) ..... **I**
Allis Co., The Louis ..... B, C, D, E, G, H, I, J
Allis-Chalmers Mfg. Co. ..... B, C, D, E, F, G, H, J
American Safety Table Co. ..... F
Barber-Colman Co. ..... B
Brook Motor Corp. ..... B, E, G, H, I
Century Electric Co. ..... B, C, D, F, G, H, I
DAVIS & FURBER MACHINE CO. ..... G
ADV. PG. 154
Dayton Electric Mfg. Co. ..... B, C, F, I
DIEHL MFG. CO. ..... B, D, E, I
ADV. PG. 99
DRAPER CORP. ..... E
ADV. PG. 1
Electra Motors, Inc. ..... A, B, C, D, G, H
Elliott Co. ..... B, C, E, H, I
Gardner-Denver Co. ..... A
General Electric Co. ..... B, C, D, E, F, G, H, I
Ginsberg Machine Co., Inc. ..... F
Ingersoll-Rand Co. ..... A
Link-Belt Co. C
Oilgear Co. ..... A
Reliance Electric & Engineering Co. ..... B, C, D, G, H, I
Robbins & Meyers, Inc. ..... B, H, I
Roberts Co. ..... G
Singer Sewing Machine Co., Mfg. Trade Dept. ..... F
Sterling Electric Motors, Inc. ..... B, C, D, H, I
U. S. Electrical Motors, Inc. ..... B, C, D, H, I
Wagner Electric Co. ..... B, C, H, I
Westinghouse Electric Corp., General Industries Div. ..... B, C, D, E, G, H, I
Worthington Corp. ..... B, C, H, I

MULES
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Johnson & Bassett, Inc.
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63

MURIATIC ACID (See Acids—Hydrochloric)

NAPHTHA SOLVENT (See Solvents)

NAPHTHALENE (See Mothproofing Agents)

NAPHTHOL COLORS (See Dyes)

NAPPER CLOTHING
Ashworth Bros., Inc.
BOOTH CO., BENJAMIN ADV. PG. 75
DAVIS & FURBER MACHINE CO. ADV. PG. 154
HOWARD BROS. ADV. PG. 73
Merrimack Card Clothing Co.

NAPPERS
Curtis & Marble Machine Co.
DAVIS & FURBER MACHINE CO. ADV. PG. 154
GESSNER CO., DAVID ADV. PG. 135
Muller, Franz—Rep. by Parrott & Ballentine and Textile Machinery Import Co.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
WOONSOCKET NAPPING MACHINERY CO. ADV. PG. 169

NEBS—*Lubricating* (See Saddles & Nebs—Lubricating)

NEEDLE BARS
Dinsmore Mfg. Co.
Jenkins Metal Shops
Kidde Textile Machinery Corp.
Main & Sons, Robt. A.
SACO-LOWELL SHOPS ADV. PGS. 68-71
TEXTILE MACHINE WORKS ADV. PGS. 140, 141

NEEDLE REPAIR
Kidde Textile Machinery Corp.
TEXTILE MACHINE WORKS ADV. PGS. 140, 141

NEEDLES
Latch ... A
Mattress ... B
Nottingham Lace (Jacquard) ... C
Sewing Machine ... D
Spring Beard ... E
Arrow Needle Co., Sub. Textile Mch. Wks. ... A
Collins Supply & Equipment Co. ... C
Dinsmore Mfg. Co. ... D
IVES CO., LOYAL J. ... E
ADV. PG. 142
Kidde Textile Machinery Corp. ... A
Laconia Cooper Sales Corp. ... A
Lamb Knitting Machine Co. ... A
LIEBERS & CO.—Rep. by ROBT. REINER INC. ... E
ADV. PG. 145
Royersford Needle Works, Inc. ... E
SCHAFFHAUSEN KNITTING MACHINE WORKS—Rep. by ROBT. REINER INC. ... A
ADV. PG. 145
Singer Sewing Machine Co., Mfg. Trade Dept. ... D
TEXTILE MACHINE WORKS ... A, E
ADV. PGS. 140, 141
Torrington Co. ... A, B, C, D, E

NETS—*Dye* (See also Bags—Dyeing & Soaking)
BEST & CO., EDW. H. ADV. PG. 169

NIPPERS—*Burling* (See Irons—Burling)

NITER CAKE (See Sodium—Salts of—Bisulfate)

NITRATE OF IRON (See Ferrous & Ferric—Salts of—Nitrate)

NITRIC ACID (See Acids)

NITROBENZENE (See Solvents)

NONWOVEN FABRIC MACHINES (See also Web-Forming Machines)
CURLATOR CORP. ADV. PG. 65
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Hunter Machine Co., James
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Ross Engineering, J. O., Div. Midland-Ross Corp.
Waldron Corp., John

NOZZLES—*Spray*
AMERICAN LAVA CORP., TITANIA DIV. ADV. PG. 97
American Moistening Co.
BAHNSON CO. ADV. PG. 4
Chain Belt Co.
Link-Belt Co.
Parks-Cramer Co.
Spraying Systems Co.
Yarnall-Waring Co.

NUMBERING MACHINES
American Numbering Machine Co.
Lathem Time Recorder Co.

NUTS (See Fasteners)

OCTYL ALCOHOL (See Solvents)

ODOR-MASKING AGENTS
Dodge & Olcott, Inc.
DOLGE CO., C. B. ADV. PG. 184
Dow Chemical Co.
Glidden Co.
Harchem Div., Wallace & Tiernan, Inc.
Onyx Oil & Chemical Co.
Solvay Process Div., Allied Chemical Corp.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemical Co., Div. Union Carbide Corp.
West Chemical Products, Inc.

NYLON (POLYAMIDE) YARNS & FIBERS (See Yarns & Fibers)

OIL—*Fiber Process*
Boil-Off ... A
Rayon ... B
Sulfonated Oils & Fats ... C
Turkey Red ... D
Wool ... E
Amalgamated Chemical Corp. ... A, B, C, D, E
American Aniline & Extract Co. ... B, C, D
American Cyanamid Co., Organic Chemicals Div. ... B, C
Antara Chemicals, Div. of General Aniline & Film Corp. ... B, E
Apex Chemical Co. ... A, B, C, D
Arkansas Co. ... A, B, C, D, E
Borne Chemical Co., Inc. ... B, E
Bryant Chemical Corp. ... A, B, C, D, E
Burkart Schier Chemical Co. ... A, B, C, D, E
Colloids, Inc. ... B, C, D, E
Dexter Chemical Corp. ... A, B, C, E
Drew Co., E. F., Textile Chemicals Dept. ... B, C, D, E
Emery Industries, Inc. ... B, E
EMKAY CHEMICAL CO. ... A, B, C, D, E
ADV. PG. 180
Esso Standard Oil Co. ... A, B, E
Hart Products Corp. ... B, C
Houghton & Co., E. F. ... B, C, E
Kali Mfg. Co. ... A, B, C, D, E
Laurel Soap Mfg. Co. ... A, B, C, D, E
Metro-Atlantic, Inc. ... C, D, E
Miller Corp., Harry ... A, B, C, E
Moretex Chemical Products, Inc. ... A, B, C
Nopco Chemical Co. ... A, B, C, D, E
Nyanza Color & Chemical Co., Inc. ... A, B, C, D
Onyx Oil & Chemical Co. ... A, B, C, D
Pioneer Salt Co. ... C, D, E
POLYMER SOUTHERN, INC. ... A, B, C
ADV. PG. 184
Procter & Gamble Co., Industrial Specialty Sales Dept. ... E
Pure Oil Co. ... E
Richmond Oil Soap & Chemical Co. ... A, B, E
Royce Chemical Co. ... C, D
Scher Bros. ... A, B, C, E
Scholler Bros., Inc. ... A, B, C, D, E
Seydel-Woolley & Co. ... A, B, C, E
Sonneborn Sons, Inc., L. ... B, C, E
Southern Sizing Co. ... A, B, C
Standard Chemical Products, Inc. ... A, B, C, D, E
Sun Oil Co. ... B, C, E
Union Carbide Chemicals Co., Div. Union Carbide Corp. ... B
Wica Chemicals, Inc. ... A, B, C, D, E
WOLF & CO., JACQUES ... A, B, C, D, E
ADV. PG. 188

OIL—*Lubricating* (See Lubricants—Oils & Greases)

OIL—*Natural*
Castor ... A
Coconut ... B
Linseed ... C
Olive ... D
Palm ... E
Pine ... F
CONCORD CHEMICAL CO. ... A, F
ADV. PG. 176
Drew Co., E. F., Textile Chemicals Dept. ... B, C, E
Glidden Co. ... F
Laurel Soap Mfg. Co. ... A, B, C, D, E, F
Minnesota Paints, Inc. ... C
Newport Industries Co., Div. Heyden Newport Chemical Co. ... F

OIL
Non-Staining ... A
Penetrating ... B
American Cyanamid Co., Organic Chemicals Div. ... B
Antara Chemicals, Div. of General Aniline & Film Corp. ... B
Arco Co. ... A
Atlantic Refining Co. ... A
Borne Chemical Co., Inc. ... A, B
Bryant Chemical Corp. ... B
EMKAY CHEMICAL CO. ... B
ADV. PG. 180
Esso Standard Oil Co. ... A, B
Gulf Oil Co. ... A, B
Houghton & Co., E. F. ... B
Kali Mfg. Co. ... A, B
Metro-Atlantic, Inc. ... A
Miller Corp., Harry ... A, B
Moretex Chemical Products, Inc. ... B
N.Y. & N.J. Lubricant Co. ... A
Nopco Chemical Co. ... A, B
Onyx Oil & Chemical Co. ... B
Pure Oil Co. ... A
Saran Lined Pipe Co. ... A
Sinclair Refining Co. ... B
Sonneborn Sons, Inc., L. ... A, B
Southern Sizing Co. ... B
Standard Chemical Products, Inc. ... B
Sun Oil Co. ... A, B
Tropical Paint Co. ... A
Union Carbide Chemicals Co., Div. Union Carbide Corp. ... A
Valvoline Oil Co., Div. Ashland Oil & Refining Co. ... A
WOLF & CO., JACQUES ... B
ADV. PG. 188

OILERS—*Hand & Mechanical* (See Lubricators)

OILERS—*Stock* (See Sprayers—Raw Stock)

OLEIC ACID (See Acids—Fatty)

OLEIN
Drew Co., E. F., Textile Chemicals Dept.

OPENERS
Cloth ... A
Cotton ... B
Spiral (See Openers—Cloth)
Man-Made Staple ... C
Tenter-Frame ... D
Wool (See also Dusting Machines—Wool & Waste) ... E
Waste (See Waste Machines)
Aldrich Machine Works ... B, C, D
BIRCH BROS., INC. ... A
ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ... A, E
ADV. PGS. 114, 115
Carolina Machinery Co. ... B, C
CENTRIF-AIR MACHINE CO. ... B, C, E
ADV. PG. 160
Curtis & Marble Machine Co. ... D
DAVIS & FURBER MACHINE CO. ... A, C, D
ADV. PG. 154
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ... A, E
ADV. PG. 145
GESSNER CO., DAVID ... A
ADV. PG. 135
Hunter, Inc., James ... B, C
Hunter Machine Co., James ... D, E
Kirkman & Dixon Machinery Co. ... B
Liberty Machine Co., Inc. ... A
MARSHALL & WILLIAMS CORP. ... E
ADV. PGS. 132, 133
MT. HOPE MACHINERY CO. ... A
ADV. PG. 105
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ... B, C
ADV. PG. 63
P&N Machine Co., Div. Peterson & Neville, Inc. ... A
PROCTOR & SCHWARTZ, INC. ... B, C, D, E
ADV. PG. 104
RIGGS & LOMBARD CO. ... A
ADV. PGS. 122, 123
SACO-LOWELL SHOPS ... B, C
ADV. PGS. 68-71
SARGENT'S SONS CORP., C. G. ... C, D
ADV. PG. 84
Schofield Co., Inc., Wm. ... A, B, C, D
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ... B, D
ADV. PG. 62
TUBULAR TEXTILE MACHINERY CORP. ... A
ADV. PG. 118
Whitin Machine Works ... B, C

OVENS
Conditioning, All Types ... A
Laboratory ... B
COBBLE BROS. MACHINERY CO., INC. ... B
ADV. PG. 91
Emerson Apparatus Co. ... A, B
Fostoria Pressed Steel Corp. ... A, B
Hunter Machine Co., James ... A
INDUSTRIAL HEAT ENGINEERING CO. ... A, B
ADV. PG. 103
Industrial Ovens ... A, B
LANLY CO. ... A, B
ADV. PG. 108
Liberty Machine Co., Inc. ... B
Lydon Bros. ... A, B
Michigan Oven Co. ... A, B
PROCTOR & SCHWARTZ, INC. ... A, B
ADV. PG. 104
RIGGS & LOMBARD CO. ... A
ADV. PGS. 122, 123
Ross Engineering, J. O., Div. Midland-Ross Corp. ... A, B
Suter Co., Alfred ... A, B
Thermomat Co. ... A
U. S. TESTING CO., INC. ... A
ADV. PG. 192
Wak Industries ... A

OVER-FEED EQUIPMENT
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ADV. PG. 145
Hunter Machine Co., James
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118

OVERSEAMING MACHINES
MERROW MACHINE CO. ADV. PG. 134

OXALIC ACID (See Acids)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

OXIDIZING AGENTS (See also under individual headings; Hydrogen Peroxide, Potassium, Permanganate, etc.)
Becco Chemical Div., Food Machinery & Chemical Corp.
Dow Chemical Co.
DU PONT DE NEMOURS & CO., INC., E. I. ELECTROCHEMICALS DEPT. ADV. PG. 181
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Scher Bros.
Shell Oil Co.
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

OZOKERITE WAX (See Waxes—Natural)

PACKAGE SHAPER
Gaston County Dyeing Machine Co.
Smith-Drum Div., Turbo Machine Co.

PACKAGING MATERIALS—*Textile*
Baxter Co.
Bemis Bro. Bag Co.
Continental Can Co., Inc.
Dow Chemical Co.
Goodyear Tire & Rubber Co.
Hinde & Dauch Paper Co.
Milprint, Inc.
Visking Co.

PACKING
Asbestos (See Packing—Rubber & Fibrous Sheet)
Braided (See Packing—Rubber, Fiber & Metallic, Spiral & Ring)
Leather & Rawhide ..... A
Rod Packing (See Packing—Rubber, Fiber & Metallic, Spiral & Ring)
Rubber & Fibrous Sheet ..... B
Rubber, Fiber & Metallic, Spiral & Ring .. C
Sheet (See Packing—Rubber & Fibrous Sheet)
Armstrong Cork Co. ..... B
Atlanta Belting Co. ..... A, B, C
Auburn Mfg. Co. ..... A, B, C
BATSON CO., LOUIS P. ..... A, B, C
ADV. PG. 112
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co. ..... B
Goodyear Tire & Rubber Co. ..... B
GRATON & KNIGHT CO. ..... A
ADV. PG. 158
Houghton & Co., E. F. ..... A, B, C
Johns-Manville Corp.
Keaskey & Mattison Co. ..... B
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... B
Republic Rubber Div., Lee Rubber & Tire Corp. ..... B
Rhoads & Sons, J. E. ..... A
Schmidt Mfg. Co. of S. C. ..... A, B
U. S. Rubber Co., Mechanical Goods Div. ..... B, C
WESTERN FELT WORKS ..... B, C
ADV. PG. 2

PADDERS (See Dyeing Machines—Padders)

PADS—*Vibration-Insulation, Machine Mounts*
AMERICAN FELT CO. ADV. PG. 166
BATSON CO., LOUIS P. ADV. PG. 112
Clark-Cutler-McDermott Co.
Felters Co.
Goodyear Tire & Rubber Co.
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Johns-Manville Corp.
Keaskey & Mattison Co.
Korfund Co.
Lord Mfg. Co.
Matthews Equipment Co.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
WESTERN FELT WORKS ADV. PG. 2

PAILS (See Buckets & Dippers)

PAINTS & ENAMELS
American-Marietta Co.
Barrelled Sunlight Paint Co.
Barrett Div., Allied Chemical & Dye Corp.
Borne Chemical Co., Inc.
Dixon Crucible Co., Joseph
Du Pont de Nemours & Co., Inc., E. I.
Electro Chemical Eng. & Mfg. Co.
Glidden Co.
Hillyard Chemical Co.
Horn Co., Inc.
Minnesota Paints, Inc.
National Lead Co.
Stanley Works, Stanley Chemical Co.
Steelcote Mfg. Co.
Warren Refining & Chem. Co.

PAINT REMOVERS (See Tar & Paint Removers)

PANELBOARDS
Control (See Control Centers—Electric)
Fusible ..... A
Circuit Breaker ..... B
Bulldog Electric Products Co. ..... A, B
General Electric Co. ..... A, B
Johns-Manville Corp. ..... B
Westinghouse Electric Corp., General Industries Div. ..... A, B
Worthington Corp. ..... A, B

PALLETS & SKIDS
Continental Can Co., Inc.
EXCEL CO., INC. ADV. PG. 165
Jenkins Metal Shops
Johns-Manville Corp.
P&N Machine Co., Div. Peterson & Neville, Inc.
Tri-State Engineering Co.

PALMERS (See Shrinking Machines)

PANTOGRAPH MACHINES
Johnson & Bassett, Inc.

PAPER
Calender-Roll ..... A
Transparent ..... B
Waterproof Wrapping C
Wrapping & Baling ..... D
American Paper Products Co. ..... D
Baxter Co. ..... B, C, D
BUTTERWORTH & SONS CO., H. W. ..... A
ADV. PGS. 114, 115
Continental Can Co., Inc. C
Gaylord Container Corp. ..... C, D
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ..... A
ADV. PGS. 126, 127
PERKINS & SON, INC., B. F. ..... A
ADV. PG. 110
THILMANY PULP & PAPER CO. ..... D
ADV. PG. 107
Union Bag & Camp Paper Co. ..... C, D

PARAFIN
Esso Standard Oil Co.
North, Inc., Frank G.
Sun Oil Co.
Valvoline Oil Co., Div. Ashland Oil & Refining Co.

PARANITRANILINE
American Cyanamid Co., Organic Chemicals Div.
National Aniline Div., Allied Chemical Corp.
Sherwin Williams Co., Pigment, Color & Chemical Div.
VERONA DYESTUFFS DIV. ADV. PG. 177

PARAPHENYLENEDIAMINE
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Sherwin Williams Co., Pigment, Color & Chemical Div.
VERONA DYESTUFFS DIV. ADV. PG. 177

PEARL ASH (See Potassium—Salts of—Carbonate)

PENETRANTS (See also Wetting Agents)
Allied Chemical Corp., Nitrogen Div.
Amalgamated Chemical Corp.
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Arnold, Hoffman & Co.
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Ciba Co., Inc.
Colgate-Palmolive Co.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Geigy Chemical Corp.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Mona Industries, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Onyx Oil & Chemical Co.
Pioneer Salt Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Procter & Gamble Co., Industrial Specialty Sales Dept.
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Southern Sizing Co.
Standard Chemical Products, Inc.
Ultra Chemical Works
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

PERCHES (See Inspection Machines)

PEROXIDES (See Hydrogen Peroxide, or Sodium—Salts of—Peroxide)

PHENOL (See Acids—Carbolic)

PHENYLEMTHYLPYRAZOLONE (See Developers)

PHOSPHATES (See under individual headings: Calcium, Potassium, Sodium—Salts of, etc.)

PHOSPHORIC ACID (See Acids)

PHTHALIC ANHYDRIDE
Baker Chemicals Co., J. T.
Barrett Div., Allied Chemical & Dye Corp.
Koppers Co.
Pittsburgh Coke & Chemical Co., Industrial Chemicals Div.
Reichhold Chemicals, Inc.
National Aniline Div., Allied Chemical Corp.

PICK CLOCKS (See Counters—Loom-Pick)

PICKER PARTS
Aldrich Machine Works
BATSON CO., LOUIS P. ADV. PG. 112
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Jenkins Metal Shops
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
SARGENT'S SONS CORP., C. G. ADV. PG. 84
Southern States Equipment Co.
Todd-Long Picker Apron Co., Inc.

PICKERS
Burr ..... A
Cotton ..... B
Fearnaught C
Loom ..... D
Mixing ..... E
Rag & Shoddy ..... F
Aldrich Machine Works ..... B
Armstrong Cork Co. ..... D
Baker Mfg. Co. ..... D
BATSON CO., LOUIS P. ..... D
ADV. PG. 112
Curtis & Marble Machine Co. ..... A, C, E, F
DAVIS & FURBER MACHINE CO. ..... A, C, E, F
ADV. PG. 154
Denman Textile Rubber Co. ..... D
DRAPER CORP. ..... D
ADV. PG. 1
GARLAND MFG. CO. ..... D
ADV. PG. 152
Graton & Knight Co. ..... D
Hunter Machine Co., James ..... B
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... D
ADV. PG. 155
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... B, C, F
ADV. PGS. 63
PROCTOR & SCHWARTZ, INC. ..... B, C, E, F
ADV. PG. 104
SACO-LOWELL SHOPS ..... B
ADV. PGS. 68-71
SARGENT'S SONS CORP., C. G. ..... A, E
ADV. PG. 84
Schmidt Mfg. Co. ..... D
Schmidt Mfg. Co. of S. C. ..... D
Schofield Co., Inc., Wm. ..... E, F
Slip-Not Belting Corp. ..... D
Tatem Mfg. Co. ..... D
Terrell Machine Co., Inc. ..... D
Whitin Machine Works ..... B, E, F

PICRIC ACID (See Acids)

PIGMENTS
Dyeing & Binders ..... A
Printing & Binders ..... B
Atlantic Chemical Corp. ..... A
Carbic Color & Chemical Co., Inc. ..... A
Ciba Co., Inc. ..... A
Du Pont de Nemours & Co., Inc., E. I. ..... A, B
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ..... B
ADV. PG. 187
Goodrich Chemical Co., B. F. ..... A, B
Harshaw Chemical Co. ..... A, B
Interchemical Corp. ..... A, B
Metro-Atlantic, Inc. ..... A, B
National Aniline Div., Allied Chemical Corp. ..... A, B
Peerless Color Co., Inc. ..... A, B
Penick & Ford, Ltd. ..... A, B

POLYMER SOUTHERN, INC. ..... A, B
ADV. PG. 184
Putnam Chemical Corp. ..... A, B
Reichold Chemicals, Inc. ..... A, B
Sandoz, Inc. ..... A
Sherwin Williams Co., Pigment, Color & Chemical Div. ..... A, B
Stein, Hall & Co., Inc. ..... B
VERONA DYESTUFFS DIV. ..... A, B
ADV. PG. 177
WOLF & CO., JACQUES ..... B
ADV. PG. 188

PILERS—*Bin*
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
PERKINS & SON, INC., B. F. ADV. PG. 110
ROY & SON CO., B. S. ADV. PG. 167

PIN BOARDS (See Boards—Pin)

PIN DRAFTERS & GILL REDUCERS
Holdsworth Mfg. Co.
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
WARNER & SWASEY CO. ADV. PG. 2nd Cover
Whitin Machine Works

PINE OIL (See Oil—Natural)

PINIONS (See Gears & Pinions)

PINKING MACHINES
Chandler Machine Co.

PINS—*Processing*
Card ..... A
Comb ..... B
Drying ..... D
Fasteners (See Fasteners)
Fibre Binder ..... E
Hackle ..... F
Lap ..... G
Picker ..... H
Tenter I
Aldrich Machine Works ..... G
Bagshaw Co., W. H. ..... A, B, D, F, H, I
BATSON CO., LOUIS P. ..... E
ADV. PG. 112
Hunter Machine Co., James I
Jenkins Metal Shops ..... G, H
Main & Sons, Robt. A. ..... A, B, D, F, H, I
MARSHALL & WILLIAMS CORP. I
ADV. PGS. 132, 133
Royersford Needle Works, Inc. ..... B
SACO-LOWELL SHOPS ..... A, B, H
ADV. PGS. 68-71
Smith Textile Apron Co., Inc. ..... A, F, G, H
SOUTHERN TEXTILE WORKS I
ADV. PG. 164
Whitin Machine Works ..... A, B, F, G, H
Winsor & Jerauld Mfg. Co.

PIPE
Acid-Resisting Alloy ..... A
Brass & Copper C
Cast Iron ..... D
Copper (See Pipe—Brass & Copper)
Corrosion-Resisting Alloy ..... E
Nickel (See Pipe—Corrosion-Resisting Alloy)
Plastic Pipe & Fittings ..... F
Rubber-Lined ..... G
Steel (See Pipe—Wrought Iron & Steel)
American Brass Co. ..... A, C, E
American Hard Rubber Co. ..... E, F, G
Babcock & Wilcox Co., Tubular Products Div. ..... A, D
BATSON CO., LOUIS P. ..... E
ADV. PG. 112
Cooper Alloy Corp. ..... E
Corning Glass Works ..... A, D
Crane Co. ..... E
Crucible Steel Co. of America ..... A, D
Duraloy Co. ..... D
Durion Co., Inc., Dept. T-W ..... A, D
Electro Chemical Eng. & Mfg. Co. ..... E, F
Gaston County Dyeing Machine Co. ..... A, D
Gates Rubber Co. ..... E, F
General Scientific Equipment Co. ..... E
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc. ..... A, F
Ryerson & Son, Inc., Joseph ..... A, D, E
Saran Lined Pipe Co. ..... A, D, E
U. S. Rubber Co., Mechanical Goods Div. ..... E
Westinghouse Electric Corp., Micarta Div. ..... E

PIRNS (See Bobbins)

PLAITING MACHINES
BIRCH BROS., INC. ADV. PG. 137
CARROLL & CO., J. E. ADV. PG. 102
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
INDUSTRIAL HEAT ENGINEERING CO. ADV. PG. 103
International Nickel Co., Inc.
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
P&N Machine Co., Div. Peterson & Neville, Inc.
REINER, INC., ROBT. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. ADV. PG. 84
Werner Machine Co.

PLASTIC COATING FOR MACHINE PARTS (See Commission Services)

PLASTICIZERS (See also Softeners)
Archer-Daniels-Midland Co.
Barrett Div., Allied Chemical & Dye Corp.
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Celanese Corp. of America
DEWEY & ALMY OVERSEAS CO., DIV. OF W. R. GRACE & CO. ADV. PG. 164
Dow Chemical Co.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Eastman Chemical Products, Inc.
Emery Industries, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Glyco Products Co., Inc.
Goodrich Chemical Co., B. F.
Harchem Div., Wallace & Tiernan, Inc.
Hercules Powder Co.
Hooker Electrochemical Co., Chemicals Div.
Nopco Chemical Co.
Penick & Ford, Ltd.
Pittsburgh Coke & Chemical Co., Industrial Chemicals Div.
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Reichhold Chemicals, Inc.
ROHM & HAAS CO., INC. ADV. PG. 185
Sherwin Williams Co., Pigment, Color & Chemical Div.
Tennessee Prod. & Chemical Corp.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
U. S. Rubber Co., Naugatuck Chem. Div.
Wica Chemicals, Inc.

PLASTICS & RESINS
Acrylics ..... A
Alkyds ..... B
Cellulosics (Acetate, Nitrate, etc.) C
Coumareneindene ..... D
Formaldehyde (Melamine, Phenolic, Urea) ..... E
Organosilicon ..... F
Polyamid ..... H
Polyethylene I
Protein ..... J
Rubber Elastomers ..... K
Styrenes L
Tetrafloroethylene ..... M
Vinyl & Polyvinyl ..... N
Alco Oil & Chemical Co. ..... K
Amalgamated Chemical Corp. ..... N
American Aniline & Extract Co. ..... A, N
American Cyanamid Co., Organic Chemicals Div. ..... E
Antara Chemicals, Div. of General Aniline & Film Corp. ..... N
Barrett Div., Allied Chemical & Dye Corp. ..... B, D, E, I
BATSON CO., LOUIS P. ..... I, L, N
ADV. PG. 112
Bolta Products Div., General Tire & Rubber Co. ..... N
Borden Chemical Co., Div. Borden Co. ..... A, E, K, L, N
Bryant Chemical Corp. ..... E, F, I, J
Canton Containers, Inc. I
Catalin Corp. of America ..... A, E, H, I, L
Ciba Co., Inc. ..... E
Colloids, Inc. ..... N
Continental Can Co., Inc. I
DEWEY & ALMY OVERSEAS CO., DIV. OF W. R. GRACE & CO. ..... L, N
ADV. PG. 164
Dixon Corp. ..... M
Dow Chemical Co. ..... C, I, L, N
Dow Corning Corp. ..... F, K
Du Pont de Nemours & Co., Inc., E. I. ..... A, C, H, I, K, M, N
Eastman Chemical Products, Inc. ..... C, I
Electro Chemical Eng. & Mfg. Co. ..... K, M, N
ENGINEERED PLASTICS, INC. ..... A, C, E, H, M, N
ADV. PG. 74
General Electric Co., Silicone Products Dept. ..... F, K
General Latex & Chemical Corp. ..... K
Goodrich Chemical Co., B. F. ..... A, K, N
Goodyear Tire & Rubber Co. ..... K, L, N
Hart Products Corp. ..... E, N
Hercules Powder Co. ..... C, I
Hooker Electrochemical Co., Plastics Div. ..... E
Koppers Co. ..... I, L
Metro-Atlantic, Inc. ..... E
Minnesota Mining & Mfg. Co. ..... K
MONSANTO CHEMICAL CO., PLASTICS DIV. ..... C, E, I, L, N
ADV. PGS. 174, 175
Moretex Chemical Products, Inc. ..... B, D, I
Morningstar-Paisley, Inc. ..... N
National Plastics, Inc. ..... E
National Starch Products Inc. ..... N
Nopco Chemical Co. ..... E, L, N
Onyx Oil & Chemical Co. ..... A, B, E, F, L, N
POLYMER INDUSTRIES ..... A, C, E, I, L, N
ADV. PG. 184
POLYMER SOUTHERN, INC. ..... A, E, I, N
ADV. PG. 184
Putnam Chemical Corp. ..... A, H, I, L, N
Quaker Chemical Products ..... A, N
Reichhold Chemicals, Inc. ..... A, B, E, N
ROHM & HAAS CO., INC. ..... A, E
ADV. PG. 185
Scher Bros. ..... B, E, I, N
Scholler Bros., Inc. ..... N
SEMET-SOLVAY PETROCHEMICAL DIV., ALLIED CHEMICAL CORP. I
ADV. PG. 183
Seydel-Woolley & Co. ..... E, I
Shawinigan Resins Corp. ..... N
Sherwin Williams Co., Pigment, Color & Chemical Div. ..... B
SPAULDING FIBRE CO. ..... E
ADV. PG. 87
Standard Chemical Products, Inc. ..... B, E, L
Stein, Hall & Co., Inc. ..... E, N
TEXTILE ADJUNCTS CORP. ..... E
ADV. PG. 182
UBS Chemical Co. ..... A, L
U. S. Rubber Co., Naugatuck Chem. Div. ..... K, L, N
Visking Co. I
Wica Chemicals, Inc. ..... A, E, I, K, L, N

PLASTICS & RESINS—*Extrusions & Mouldings*
American Hard Rubber Co.
Barrett Div., Allied Chemical & Dye Corp.
BATSON CO., LOUIS P. ADV. PG. 112
Bolta Products Div., General Tire & Rubber Co.
DEWEY & ALMY OVERSEAS CO., DIV. W. R. GRACE & CO. ADV. PG. 164
Dixon Corp.
Dow Chemical Co.
LEWIS CO., G. B. ADV. PG. 168
Miller Corp., Harry
MT. HOPE MACHINERY CO. ADV. PG. 105
National Plastics, Inc.
Nopco Chemical Co.
Plastic Industries
Richardson Co.
U. S. Rubber Co., Mechanical Goods Div.
Westinghouse Electric Corp., Micarta Div.

PLATES—*Heating & Cooling* (Steel or Stainless Steel—See Steel)
DeLaval Separator Co.
Tranter Mfg., Inc.
West Point Foundry & Machine Co.
WEIGAND CO., EDWIN L. ADV. PG. 130

PLATES & PULLEYS—*Magnetic Separators*
BATSON CO., LOUIS P. ADV. PG. 112
Homer Mfg. Div., Ohio Electric Mfg. Co.
West Point Foundry & Machine Co.

PLATING—*Chromium, etc.*
Atlantic Steel Co.
Greensboro Loom Reed Co., Inc.
Jenkins Metal Shops
MITCHELL-BISSELL CO. ADV. PG. 77
Walton & Lonsbury

PLEATING MACHINES
Chandler Machine Co.
RABOFSKY G.M.B.H., Rep. by ROBT. REINER, INC. ADV. PG. 145

POINTS
Full-Fashioned Narrowing & Picot ..... A
Transfer ..... B
IVES CO., LOYAL J. ..... B
ADV. PG. 142
REINER, INC. ..... A, B
ADV. PG. 145
TEXTILE MACHINE WORKS ..... A, B
ADV. PGS. 140, 141
Torrington Co. ..... A, B

POLES—*Drying*
BATSON CO, LOUIS P. ADV. PG. 112
Briggs-Shaffner Co.
League Mfg. Co., G. F.

POLISHERS—*Floor* (See Floor Cleaning, Sanding, Scrubbing & Polishing, etc.)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

POLYESTER FILM
DU PONT DE NEMOURS & CO., E. I., FILM DEPT. ADV. PG. 59

POLYESTER YARNS & FIBERS (See Yarns & Fibers)

POLYETHYLENE YARNS & FIBERS (See Yarns & Fibers)

POLYSTYRENE YARNS & FIBERS (See Yarns & Fibers)

POLYVINYLIDENE CHLORIDE YARNS & FIBERS (See Yarns & Fibers)

PORCUPINES
Main & Sons, Robt. A.

POTASSIUM—*Salts of*
Acetate ..... A
Bichromate ..... B
Bisulfite C
Carbonate ..... D
Chlorate ..... E
Chromate ..... F
Cyanide ..... G
Ferricyanide ..... H
Ferricyanide (Red Prussiate of Potash) I
Hydroxide (Caustic Potash) ..... J
Perchlorate ..... K
Permanganate L
Phosphates ..... M
Pyrophosphate ..... N
Antara Chemicals, Div. of General Aniline & Film Corp. J
Columbia-Southern Chemical Corp. ..... B, J
DU PONT DE NEMOURS & CO., INC., E. I., ELECTROCHEMICALS DEPT. ..... J, L
ADV. PG. 181
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. A, L
ADV. PG. 179
Hooker Electrochemical Co., Chemicals Div. ..... D, J, K
Koppers Co. ..... G
Monsanto Chemical Co., Organic Chemicals Div. ..... N
Olin Mathieson Chemical Corp., Industrial Chemical Div. J
Pennsalt Chemicals Corp. ..... J
Scher Bros. ..... B
Solvay Process Div., Allied Chemical Corp. ..... B, D, F, J
Union Carbide Chemicals Co., Div. Union Carbide Corp. A
Victor Chemical Works ..... M, N

POTATO STARCH (See Starches—Natural)

POTENTIOMETERS—*pH Testing* (See Instruments pH Indicator)

POTENTIOMETERS—*Recording* (See Instruments—Temperature Indicating & Recording)

POT-EYES
Ceramic ..... A
Metal ..... B
Synthetic C
AMERICAN LAVA CORP. ..... A
ADV. PG. 97
BATSON CO., LOUIS P. ..... B
ADV. PG. 112
BIRCH BROS., INC. ..... B
ADV. PG. 137
Heany Industrial Ceramics Corp. ..... A
HUNT MACHINE CO., RODNEY ..... B
ADV. PG. 95
Hunter Machine Co., James ..... B
Industrial Coatings, Inc. C
Kidde Textile Machinery Corp. ..... A
MITCHELL-BISSELL CO. ..... A
ADV. PG. 77
MT. HOPE MACHINERY CO. ..... B
ADV. PG. 105
P&N Machine Co., Div. Peterson & Neville, Inc. ..... B
RIGGS & LOMBARD CO. ..... B
ADV. PGS. 122, 123
TEXTILE SHOPS ..... B
ADV. PGS. 120, 121

POTS—*Rayon Spinning*
American Hard Rubber Co.
Briggs-Shaffner Co.

PREBOARDING MACHINES (See Hosiery Boarding & Preboarding Machines)

PRESSES—*Baling* (See Baling Presses)

POWER UNITS—*Hydraulic & Pneumatic*
Bellows Co., The
Consolidated Baling Machine Co.
Dayton Electric Mfg. Co.
Gardner-Denver Co.
Oilgear Co.
Powers Regulator Co.

PRESSING MACHINES—*Cloth*
GESSNER CO., DAVID ADV. PG. 135
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ADV. PG. 158

PRINTING ASSISTANTS (See under individual headings; Gums, Dextrin, Penetrants, Reducing Agents, Starches, etc.)

PRINTING MACHINES
Brigg-Shaffner Co.
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
Kaumagraph Co.
Liberty Machine Co., Inc.
REINER, INC., ROBT. ADV. PG. 145
Rice Barton Corp.
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Verdiun Machine Corp.
Waldron Corp., John
Werner Machine Co.

PRINTING THICKENERS (See also under Dextrin, Gums, Starches, etc.)
Antara Chemicals, Div. of General Aniline & Film Corp.
Bryant Chemical Corp.
Goodrich Chemical Co., B. F.
Hart Products Corp.
Kelco Co.
Metro-Atlantic, Inc.
Morningstar-Paisley, Inc.
National Starch Products Inc.
Penick & Ford, Ltd.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Royce Chemical Co.
Rumford Chemical Works
Scher Bros.
Stein, Hall & Co., Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
WOLF & CO., JACQUES ADV. PG. 188

PROPHYLENE DICHLORIDE (See Solvents)

PRUSSION BLUE (See Ferrous & Ferric—Salts of—Fessocyonide)

PSYCHROMETERS (See Instruments—Wet Bulb Hygrometer or Instruments—Humidity Indicating & Recording)

PULLERS—*Cloth*
BIRCH BROS., INC. ADV. PG. 137
MT. HOPE MACHINERY CO. ADV. PG. 105
West Point Foundry & Machine Co.

PULLEYS
Clutch (See Clutches—Friction)
Iron, Steel, Wood & Ceramic ..... A
Variable-Speed Motor ..... B
Tape Tension C
AMERICAN LAVA CORP., TITANIA DIV. ..... A
ADV. PG. 97
American Pulley Co. ..... A, B
Arguto Oilless Bearing Co. C
Atlanta Belting Co. ..... B
BATSON CO., LOUIS P. ..... A, C
ADV. PG. 112
Continental Gin Co., Industrial Div. ..... A
Dayton Rubber Co. ..... B
Dodge Mfg. Corp. ..... A
Fafnir Bearing Co. ..... A
Gates Rubber Co. ..... A, B
Heany Industrial Ceramics Corp. ..... A
Jenkins Metal Shops ..... A, C
League Mfg. Co., G. F. ..... A
Lewellen Mfg. Co. ..... B
Link-Belt Co. ..... A, B
Matthews Equipment Co. C
Meadows Mfg. Co. C
National Plastics, Inc. C
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. C
ADV. PG. 63
Reeves Pulley Co. ..... B
Reliance Electric & Engineering Co. ..... B
Roberts Co. C
ROY & SON, B. F. ..... B
ADV. PG. 167
SKF Industries, Inc. C
Stephens-Adamson Mfg. Co. ..... A
Whitin Machine Works ..... A, C
Wood's Sons Co., T. B. ..... A, B
Worthington Corp. ..... B

PUMICE STONE
Greensboro Loom Reed Co., Inc.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

PUMPS
Boiler Feed ..... A
Centrifugal ..... B
Corrosion-Resistant C
Deep Well (See Pumps—Centrifugal)
Gas ..... D
Piston & Plunger ..... E
Rotary Displacement ..... F
Sump (See Pumps—Centrifugal)
Turbine Type (See Pumps—Centrifugal)
Vacuum ..... G
ALLEN SON'S CO., WM., DIV. OF O. G. KELLEY & CO. B
ADV. PG. 128
Allis-Chalmers Mfg. Co. ..... A, B, D, G
American Hard Rubber Co. ..... B, C
American Marsh Pump, Inc. ..... A, B, C, E, G
AURORA PUMP DIV., N. Y. AIR BRAKE CO. ..... A, B, C
ADV. PG. 166
Blackmer Pump Co., Inc. ..... C, F
Brosites Machine Co. C
Buffalo Pumps, Div. Buffalo Forge Co. ..... A, B, C
Cooper Alloy Corp. ..... C, F
Dayton Electric Mfg. Co. ..... B, E, F
The Deming Co. ..... A, B, E, F
Gardner-Denver Co. ..... A, B, E, G
Gaston County Dyeing Machine Co. ..... B, C, G
Goulds Pumps, Inc. ..... A, B, C, F
Ingersoll-Rand Co. ..... A, B, C, D, G
JOHNSON CORP. ..... A
ADV. PG. 116
Lincoln Engineering Co. ..... C, E
LOGEMANN BROS. CO. ..... C, E
ADV. PG. 149
Peerless Pump Div., Food Machinery & Chemical Corp. A, B, C
Robbins & Meyers, Inc. ..... A, C, F
Roy Co., Milton ..... A, C, E
Saran Lined Pipe Co. C
Shriver & Co. C
Smith-Drum Div., Turbo Machine Co. ..... B
Warren Pumps, Inc. ..... A, B, C, E, F, G
West Point Foundry & Machine Co. ..... C, F
Worthington Corp. ..... A, B, C, E, F, G

PURIFIERS—*Water* (See also Water Treatment—Water Softening Equipment)
Allis-Chalmers Mfg. Co.
American Water Softener Co.
Cochrane Corp.
Dow Chemical Co.
Permutit Co., Div. Pfaudler Permutit, Inc.

PYRIDINE (See Solvents)

PYROLIGNITE OF IRON (See Ferrous & Ferric—Salts of)

PYROMETERS (See Instruments—Temperature Indicating & Recording)

PYROXYLIN (Nitrocellulose)
Du Pont de Nemours & Co., Inc., E. I.
Hercules Powder Co.

QUENCH BOXES (See Tanks)

QUETSCHES
BIRCH BROS., INC. ADV. PG. 137
CARROLL & CO., J. E. ADV. PG. 102
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
GESSNER CO., DAVID ADV. PG. 135
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER, INC. ADV. PG. 145
Hunter Machine Co., James
Kidde Textile Machinery Corp.
Liberty Machine Co., Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
TEXTILE SHOPS ADV. PGS. 120, 121
Tower Iron Works
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
Van Vlaanderen Machine Co.
Verdiun Machine Corp.
Werner Machine Co.
West Point Foundry & Machine Co.

QUILL-POLISHING MACHINES
Nash Co., Inc., J. M.
REINER, INC., ROBT. ADV. PG. 145

QUILL-STRIPPING MACHINES (See Bobbin-Stripping Machines)

QUILLERS (See Winders—Filling)

QUILLS (See Bobbins)

RACKS—*Storage* (See Shelves—Bins & Racks, or Beam Storage Racks)

RAG DYEING MACHINES (See Dyeing Machines—Raw Stock)

RAG PICKERS (See Pickers—Rag & Shoddy)

RAISING MACHINES (See Nappers)

RANGES
Bleaching (See Bleaching Machines)
Carbonizing (See Carbonizers—Piece Goods)
Dyeing (See Dyeing Machines—Piece Goods)
"Sanforized" (See "Sanforized" Machines)

RANGES—*Splitting & Extracting* (Knit Goods)
BIRCH BROS., INC. ADV. PG. 137
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118

RAYON OILS (See Oils—Fiber Process)

RAYON SIZINGS (See Sizing Agents)

RAYON (REGENERATED CELLULOSE) YARNS & FIBERS (See Yarns & Fibers)

RECORDERS (See Instruments of all Types)

RED OIL (See Acids—Fatty, Oleic)

RED PRUSSIATE (See Potassium—Salts of)

"REDMANIZED" EQUIPMENT
PROCTOR & SCHWARTZ, INC. ADV. PG. 104

REDRAW FRAMES (See Throwing Equipment)

REDUCERS—*Speed* (Gear—See Motors—Gear; Worsted—See Roving Frames—Worsted)
Allis-Chalmers Mfg. Co.
American Pulley Co.
Bond Co., Chas.
Cleveland Worm & Gear Co.
Dodge Mfg. Corp.
Electra Motors, Inc.
General Electric Co.
Gossett Machine Works, Inc.
Link-Belt Co.
Morse Chain Co.
Reliance Electric & Engineering Co.
Sterling Electric Motors, Inc.
West Point Foundry & Machine Co.

REDUCING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
Du Pont de Nemours & Co., Inc., E. I.
Onyx Oil & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Royce Chemical Co.
Scher Bros.
Standard Chemical Products, Inc.
Steelcote Mfg. Co.
TENNESSEE CORP. ADV. PG. 186
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

REED-CLEANING MACHINES (See also Cleaners—Reed)
Carolina Loom Reed Co.
Greensboro Loom Reed Co., Inc.
Matthews Equipment Co.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

REEDS—*Lease, Loom, Metal or Pitch Band* (Expansion—See Combs—Expansion)
Allen Beam Co.
ANDREWS CO. ADV. PG. 156
Carolina Loom Reed Co.
DRAPER CORP. ADV. PG. 1
Greensboro Loom Reed Co., Inc.
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

REELERS—*Cloth* (See Winders—Cloth)

REELERS—*Skein* (See Reels—Skeining)

REELS—*Bleaching & Dyeing*
Bleaching & Dyeing ..... **A**
Dresser ..... **B**
Inspection (See Perches)
Skeining (See also Winders—Skein) ..... **C**
BIRCH BROS., INC. ..... A
ADV. PG. 137
Briggs-Shaffner Co. ..... A
BUTTERWORTH & SONS CO., H. W. ..... A
ADV. PGS. 114, 115
Collins Bros. Machine Co. C
DAVIS & FURBER MACHINE CO. ..... B
ADV. PG. 154
Fidelity Machine Co. C
Glasco Equipment Corp. ..... A
Greenville Steel & Foundry Co. ..... A
Hunter Machine Co., James ..... A
Jenkins Metal Shops ..... A, C
Johnson & Bassett, Inc. C
Lazenby Co., F. A. C
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ..... A
ADV. PGS. 126, 127
P&N Machine Co., Div. Peterson & Neville, Inc. ..... A
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
Tower Iron Works ..... A
Werner Machine Co. ..... A

RELAYS (See Controls—Automatic & Manual Motor)

REPEATERS—*Jacquard Card* (See Jacquard Card—Cutting Machines)

REGULATORS
Condenser Water (See Controls—Fluid-Flow)
Damper & Draft ..... **A**
Humidity (See Controls—Humidity)
Motor Speed (See Controls—Automatic & Manual)
Pressure (See Controls—Pressure & Vacuum)
Rate-of-Flow (See Controls—Fluid-Flow)
Slasher Roll Pressure ..... **B**
Temperature (See Controls—Temperature)
Vacuum (See Controls—Pressure & Vacuum)
Air & Refrigeration Corp. ..... A
Bailey Meter Co. ..... A
Barber-Colman Co. ..... A
Bristol Co. ..... A, B
Jenkins Metal Shops ..... A
Mason-Neilan, Div. of Worthington Corp. ..... A, B
Minneapolis-Honeywell Regulator Co. ..... A
Powers Regulator Co. ..... A, B
Reliance Electric & Engineering Co. ..... B
West Point Foundry & Machine Co. ..... B

RE-ROLLING MACHINES
BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
Firsching & Son, Inc., J. A.
Industrial Ovens
Liberty Machine Co., Inc.
REINER, INC., ROBT. ADV. PG. 145
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SOUTHERN MACHINE CO. ADV. PG. 162
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ADV. PG. 158
Van Vlaanderen Machine Co.
Verdiun Machine Corp.
Waldron Corp., John
Werner Machine Co.

RESIN-CURING MACHINES
ANDREWS & GOODRICH, Div. Midland-Ross Corp. ADV. PG. 124
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ADV. PG. 145
Hunter Machine Co., James
INDUSTRIAL HEAT ENGINEERING CO. ADV. PG. 103
Industrial Ovens
LANLY CO. ADV. PG. 108
P&N Machine Co., Div. Peterson & Neville, Inc.
Tubular Textile Machinery Corp.
Verdiun Machine Corp.
Werner Machine Co.
WIEGAND CO., EDWIN L. ADV. PG. 130

RESIN FINISHES (See Plastics & Resins)

RESORCINE
Baker Chemicals Co., J. T.
Koppers Co.

RETARDING AGENTS
Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Berkshire Color & Chemical Corp.
Burkart Schier Chemical Co.
Dexter Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
Geigy Chemical Corp.
Hart Products Corp.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Nopco Chemical Co.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN ADV. PG. 184
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
Scher Bros.
Scholler Bros., Inc.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

REVOLVING OR ROTARY JOINTS (See Joints—Revolving)

REWETTING AGENTS (See Wetting Agents)

REWINDERS (See Backwinders, or Winders—Cloth)

RHEOSTATS—*Speed Regulating* (See Controls—Automatic & Manual Motor)

RIBBERS (See Knitting Machines—Ribbers)

RIBBON LAPPERS (See Lappers—Ribbon)

RICE STARCH (See Starch—Natural)

RING-DOFFER CONDENSERS
DAVIS & FURBER MACHINE CO. ADV. PG. 154
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Whitin Machine Works

RINGS—*Guide* (See Guides—Thread)

RINGS—*Hydraulic* (See Packing—Rubber, Fiber, Metallic, Spiral & Ring)

RINGS—*Spinning & Twister*
Collins Bros. Machine Co.
DRAPER CORP. ADV. PG. 1
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Herr Mfg. Co.
Klutz Machine & Foundry Co.
NATIONAL VULCANIZED FIBRE CO. ADV. PG. 156
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
RAGAN RING CO. ADV. PG. 130
SACO-LOWELL SHOPS ADV. PGS. 68-71
Whitin Machine Works
Whitinsville Spinning Ring Co.

RODS
Corrosion-Resisting (See Steel—Corrosion-Resisting)
Electrode for Stop Motions ..... **A**
Lap ..... **B**
Lease ..... **C**
Lifter ..... **D**
Split (See Rods—Lease)
Welt (See Hooks—Welt)
BATSON CO., LOUIS P. ..... C, D
ADV. PG. 112
Dixie Spindle & Flyer Co. ..... D
ENGINEERED PLASTICS, INC. C
ADV. PG. 74
GASTONIA ROLLER, FLYER & SPINDLE CO. ..... D
ADV. PG. 157
Greensboro Loom Reed Co., Inc. C
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. C
ADV. PG. 155

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

Jenkins Metal Shops . . . B, D
Kidde Textile Machinery Corp. . . . A
League Mfg., G. F. . . . C
McCaskie, Inc., Wm. . . . C
Norris Bros. . . . C
Roberts Co. . . . D
SACO-LOWELL SHOPS . . . B, D
ADV. PGS. 68-71
Schmidt Mfg. Co. of S. C. . . . C, D
Whitin Machine Works . . . B, D

ROLL-COVERING MACHINES

Armstrong Cork Co.
Cotton-McCauley & Co., Inc.

ROLL STANDS

BATSON CO., LOUIS P. ADV. PG. 112
Curtis & Marble Machine Co.
Dixon Corp.
GASTONIA ROLLER, FLYER & SPINDLE CO. ADV. PG. 157
HUNT MACHINE CO., RODNEY ADV. PG. 95
Jenkins Metal Shops
Liberty Machine Co., Inc.
Meadows Mfg. Co.
MT. HOPE MACHINERY CO. ADV. PG. 105
P&N Machine Co., Div. Peterson & Neville, Inc.
Roberts Co.
SACO-LOWELL SHOPS ADV. PGS. 68-71
SOUTHERN MACHINE CO. ADV. PG. 162
Tower Iron Works
Whitin Machine Works

ROLLS

Brush . . . A
Calender . . . B
Clearer (See Clearers—Flat & Revolving)
Cloth . . . C
Crush . . . D
Doffer . . . E
Drawing, Roving & Spinning . . . F
Embossing (See Rolls—Calender)
Fabric Transit (See Cores)
Feed (See Feeders—Continuous Roll)
Finishing . . . G
Fluted . . . H
Fulling . . . I
Guider . . . J
Lap . . . K
Loom Cloth . . . L
Printing . . . M
Roving (See Rolls—Drawing, Roving & Spinning)
Rubber-Covered . . . N
Scavenger . . . O
Shell (See Rolls—Drawing, Roving & Spinning)
Spinning (See Rolls—Drawing, Roving & Spinning)
Squeeze (See Quetches)
Temple (See Temples—Loom)
Top (See Rolls—Drawing, Roving & Spinning)
Twisting-Machine . . . P
Warper & Slasher . . . Q

American Hard Rubber Co. . . . N
APPLETON MACHINE CO. . . . B
ADV. PG. 125
BATSON CO., LOUIS P. . . . C, F, K, L, N, O
ADV. PG. 112
BIRCH BROS., INC. . . . A, B, N
ADV. PG. 137
Briggs-Shaffner Co. . . . N
BUTTERWORTH & SONS CO., H. W. . . . B, J, M, N
ADV. PGS. 114, 115
CARROLL & CO., J. E. . . . C, G, N
ADV. PG. 102
COCKER MACHINE & FOUNDRY CO. . . . B, N, Q
ADV. PGS. 100, 101
Cole Engineering Corp. . . . F
Collins Bros. Machine Co. . . . P
Colonial Rubber Co. . . . N
Cotton-McCauley & Co., Inc. . . . F
Curtis & Marble Machine Co. . . . A, B, C
Dayton Rubber Co. . . . Q
Dixie Spindle & Flyer Co. . . . H
Dixon Corp. . . . F, H, N
DRAPER CORP. . . . L
ADV. PG. 1
Felton & Son Co., S. A. . . . A
GASTONIA ROLLER, FLYER & SPINDLE CO. . . . B, F, H, P
ADV. PG. 157
Gates Rubber Co. . . . N
GESSNER CO., DAVID . . . A, C, G
ADV. PG. 135
Gibson Textile Specialty Co. . . . D
Goodyear Tire & Rubber Co. . . . M, N
Gossett Machine Works, Inc. . . . B, F
Guider Roll & Service Co. . . . J
Hardwood Mfg. Co., Inc. . . . H
Holdsworth Mfg. Co., Inc. . . . H, N
HUNT MACHINE CO., RODNEY . . . C, E, F, G, H, I, N
ADV. PG. 95
Hunter Machine Co., James . . . C, D, E, H, I, J, N
IDEAL MACHINE SHOPS . . . F, H
ADV. PG. 86
Industrial Brush Co. . . . A
Industrial Ovens . . . B, C, F, N
Jenkins Metal Shops . . . K, O, P
JENKINS SONS, M. W. . . . A, N
ADV. PG. 154

Kidde Textile Machinery Corp. . . . Q
League Mfg. Co., G. F. . . . C, H, K
Liberty Machine Co., Inc. . . . G, J, N
LIVINGSTON & HAVEN, INC. . . . B
ADV. PG. 94
Martin & Sons, Adolph . . . A, C, G, J, L, M, N, Q
MASON-WORCESTER BRUSH CO. . . . A
ADV. PG. 161
McCaskie, Inc., Wm. . . . C, G, H, L
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. . . . B, N
ADV. PGS. 126, 127
MT. HOPE MACHINERY CO. . . . J, N
ADV. PG. 105
Norris Bros. . . . O
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. . . . A, B, E, F, H, K, P, Q
ADV. PG. 63
PERKINS & SON, INC., B. F. . . . A, B
ADV. PG. 110
P&N Machine Co., Div. Peterson & Neville, Inc. . . . C, G, N
Progressive Engineering, Inc. . . . F
REINER, INC. . . . Q
ADV. PG. 145
Richardson Co. . . . I, K
RIGGS & LOMBARD CO. . . . I, N
ADV. PGS. 122, 123
Roberts Co. . . . F, H
SACO-LOWELL SHOPS . . . B, F, K, O, P, Q
ADV. PGS. 68-71
SARGENT'S SONS CORP., C. G. . . . D, E
ADV. PG. 84
Schmidt Mfg. Co. . . . C
SONOCO PRODUCTS CO. . . . F, K, O
ADV. PG. 54
SPAULDING FIBRE CO. . . . K
ADV. PG. 87
Tower Iron Works . . . C, N, Q
Tyer Rubber Co. . . . N
U. S. Rubber Co., Mechanical Goods Div. . . . N
Universal Winding Co. . . . P
Verdiun Machine Corp. . . . B, Q, J, N
Werner Machine Co. . . . M, N
Westinghouse Electric Corp., Micarta Div. . . . K, L
West Point Foundry & Machine Co. . . . G, N, Q
Whitin Machine Works . . . A, B, F, H, K, O
Woonsocket Rubber Co., Inc. . . . B, G, N
YOUNG MACHINE CO., F. A. . . . B, F, H, O, P
ADV. PG. 78

ROPE MACHINES

Haskell-Dawes Mach. Co.
Hunter Machine Co., James
RIGGS & LOMBARD CO. ADV. PGS. 122, 123

ROPE—*Mule* (See Bands—Mule, Spinning & Twisting)

ROOFING MATERIALS

Barrett Div., Allied Chemical & Dye Corp.
Horn Co., Inc.
Johns-Manville Corp.
Minnesota Mining & Mfg. Co.
Tropical Paint Co.
Warren Refining & Chem. Co.

ROSIN

Glidden Co.
Newport Industries Co., Div. Heyden Newport Chemical Co.
Hercules Powder Co.

ROVING FRAMES

PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PGS. 68-71
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Whitin Machine Works

RUB APRONS (See Aprons—Rub)

RUBBER-COVERING MACHINES

Hardwood Mfg. Co., Inc.
LANLY CO. ADV. PG. 108
PERKINS & SON, INC., B. F. ADV. PG. 110

RUBBING MACHINES

Werner Machine Co.

RULERS—*Straight Edge*

Fairgate Rule Co.

SADDLE-WEIGHT MEASURER

Cotton-McCauley & Co., Inc.
Dixon Corp.
YOUNG MACHINE CO., F. A. ADV. PG. 78

SADDLES & NEBS

Lubricating . . . A
Non-Lubricating . . . B
BATSON CO., LOUIS P. . . . A, B
ADV. PG. 112
Cole Engineering Corp. . . . B
Cotton-McCauley & Co., Inc. . . . B
Dixon Corp. . . . A, B
Matthews Equipment Co. . . . A
Meadows Mfg. Co. . . . A, B
Paramount Oilless Bearing Co. . . . B
Roberts Co. . . . B
Whitin Machine Works . . . A
YOUNG MACHINE CO., F. A. . . . B
ADV. PG. 78

SAFETY DEVICES AND/OR INFORMATION

DOLGE CO., C. B. ADV. PG. 184
Electric Storage Battery Co.
General Scientific Equipment Co.

SAL SODA (See Sodium—Salts of—Chloride & Sulfate)

SALT (See Sodium—Salts of—Chloride & Sulfate)

SANDING MACHINES (See Floor Cleaning, Sanding, Scrubbing & Polishing Machines)

"SANFORIZED" ASSISTANTS

Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Borne Chemical Co., Inc.
Bryant Chemical Corp.
CONCORD CHEMICAL CO. ADV. PG. 176
Dexter Chemical Corp.
Emery Industries, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Hart Products Corp.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
Mona Industries, Inc.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
POLYMER SOUTHERN, INC. ADV. PG. 184
Quaker Chemical Products
Scher Bros.
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Standard Chemical Products, Inc.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

"SANFORIZED" MACHINES

BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
Morrison Machine Co.
P&N Machine Co., Div. Peterson & Neville, Inc.
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62

SATURATING MACHINES (See Impregnating Machines)

SCAFFOLDS & LADDERS—Portable

Ballymore Co.
EXCEL CO., INC. ADV. PG. 165

SCALES

Bench (See Scales—Counter & Platform)
Counter & Platform . . . A
Dial (See Scales—Counter & Platform)
Floor (See Scales—Counter & Platform)
Hanging (See Scales—Counter & Platform)
Laboratory . . . B
Lap . . . C
Monorail . . . D
Overhead Track (See Scales—Monorail)
Predetermined Weight . . . E
Weight Printing & Recording . . . F
Testing (See Scales—Laboratory)
Truck & Track . . . G

American Monorail Co. . . . D
Exact Weight Scale Co. . . . A, B, C, E, F
General Scientific Equipment Co. . . . B
Louden Machinery Co. . . . D
Suter Co., Alfred . . . B
Toledo Scale Corp. . . . A, B, C, D, E, F, G
Whitin Machine Works . . . B

SCHIFFLI MACHINES (See Embroidering Machines)

SCISSORS & SHEARS—*Mill*
American Production Machine Co.
Collins Supply & Equipment Co.
Ginsberg Machine Co., Inc.,

SCOURING AGENTS (See under individual headings; Detergents, Soaps)

SCOURING MACHINES
Cloth ..... A
Raw Stock ..... B
Yarn C
BIRCH BROS., INC. ..... A
ADV. PG. 137
COCKER MACHINE & FOUNDRY CO. ..... A
ADV. PGS. 100, 101
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER INC. ADV. PG. 145
Greenville Steel & Foundry Co.
HUNT MACHINE CO., RODNEY ..... A
ADV. PG. 95
Hunter Machine Co., James ..... A, B
KLAUDER WELDON GILES MACHINE CO. C
ADV. PG. 113
PROCTOR & SCHWARTZ, INC. ..... B
ADV. PG. 104
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. ..... B, C
ADV. PG. 84
TEXTILE SHOPS ..... A
ADV. PGS. 120, 121
Tower Iron Works ..... A
Werner Machine Co. ..... A

SCRAYS & CRADLES—*Cloth*
BIRCH BROS., INC. ADV. PG. 137
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
Curtis & Marble Machine Co.
GESSNER CO., DAVID ADV. PG. 135
Greenville Steel & Foundry Co.
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
Liberty Machine Co., Inc.
MT. HOPE MACHINERY CO. ADV. PG. 105
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
TEXTILE SHOPS ADV. PGS. 120, 121
Tower Iron Works
Werner Machine Co.
West Point Foundry & Machine Co.

SCREENS—*Card, Lickerin, Picker & Waste Machine*
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Gastonia Textile Sheet Metal Works, Inc.
Jenkins Metal Shops
Paddock Co., J. C.
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
TEXTILE SHOPS ADV. PGS. 120, 121
Whitin Machine Works

SCREWS (See Fasteners)

SCROOPING AGENTS
Amalgamated Chemical Corp.
Apex Chemical Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Dayton Rubber Co.
Dexter Chemical Corp.
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 179
Hart Products Corp.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Miller Corp., Harry
Nopco Chemical Co.
Onyx Oil & Chemical Co.
POLYMER SOUTHERN, INC. ADV. PG. 184
Quaker Chemical Products
Richmond Oil Soap & Chemical Co.
Scher Bros.
Scholler Bros., Inc.
Sonneborn Sons, Inc., L.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

SCUTCHERS—*Cloth* (See Openers—Cloth)

SCRUBBERS—*Floor* (See Floor Cleaning, Sanding, Scrubbing & Polishing Machines)

SEALERS
Bag ..... A
Carton (See Wire Stitching Machines)
Slot, Vacuum ..... B
BIRCH BROS., INC. ..... B
ADV. PG. 137
GESSNER CO., DAVID ..... B
ADV. PG. 135
Miller Wrapping & Sealing Machine Co. ..... A

SEALS
Bale (See Strapping—Box & Carton)
Box (See Labels—Box & Carton)
Steel Strapping (See Strapping—Box & Carton)

SEAMERS (See also Sewing Machines)
BIRCH BROS., INC. ADV. PG. 137
MERROW MACHINE CO. ADV. PG. 134

SELVAGE-LOOP CUTTING MACHINES (See Cutters—Selvage-Loop)

SELVAGE UNCURLERS
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
MOUNT HOPE MACHINERY CO. ADV. PG. 105

SEMI-DECATING MACHINES (See Decating Machines)

SEPARATORS
Air, Oil, Steam & Water ..... A
Centrifugal (See Extractors—Centrifugal)
Magnetic ..... B
Spinner C
Twister ..... D
Air Maze Corp. ..... A
Alemite Div., Stewart-Warner Corp. ..... A
Anderson Co., V. D. ..... A
BATSON CO., LOUIS P. ..... B, C, D
ADV. PG. 112
Clark Mfg. Co. ..... A
Cochrane Corp. ..... A
Collins Bros. Machine Co. ..... D
Cotton-McCauley & Co., Inc. ..... D
Crane Co. ..... A
Crucible Steel Co. of America ..... B
DeLaval Separator Co. ..... A
Eriez Mfg. Co. ..... B
Graver Water Conditioning Co. ..... A
Homer Mfg. Div., Ohio Electric Mfg. Co. ..... B
Hunter Machine Co., James ..... A
JOHNSON CORP. ..... A
ADV. PG. 116
Lehigh Fan & Blower Div., Fuller Co. ..... A
Matthews Equipment Co. ..... C, D
National Plastics, Inc. ..... C, D
Pfaudler Co., Div. Pfaudler Permutit, Inc. ..... A, C
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... C, D
ADV. PG. 63
Roberts Co. ..... B
SACO-LOWELL SHOPS ..... C, D
ADV. PGS. 68-71
Whitin Machine Works ..... C, D

SEQUESTERING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Burkart Schier Chemical Co.
Dexter Chemical Corp.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
Geigy Chemical Corp.
Glyco Products Co., Inc.
Hart Products Corp.
Metro-Atlantic, Inc.
Miller Corp., Harry
Mona Industies, Inc.
Oakite Products, Inc.
Putnam Chemical Corp.
Refined Products Corp.
Richmond Oil Soap & Chemical Co.
Rumford Chemical Works
Scher Bros.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Wica Chemicals, Inc.

SETTERS—*Twist* (See Twist Setters)

SETTERS—*Woven-Fabric* (See Tenter Frames—Cloth)

SEWING MACHINES
Birch Bros., Inc.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Ginsberg Machine Co., Inc.
MERROW MACHINE CO. ADV. PG. 134
Singer Sewing Machine Co., Mfg. Trade Dept.
Union Special Machine Co.
UTICA NOVELTY & MILL SPECIALTY CO. ADV. PG. 158
Willcox & Gibbs Sewing Machine Co.

SHEARS—*Rotary*
Carpet (See Shears—Rotary)
Mill (See Scissors & Shears—Mill)
Pinking (See Pinking Machines)
Curtis & Marble Machine Co.
Hermas Div., Curtis & Marble Machine Co.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Ryerson & Son, Inc., Joseph
TURBO MACHINE CO. ADV. PG. 118

SHEAVES
Belt (See Drives—V-Belt)
Dobby ..... A
Harness ..... B
V-Belt C
Allis-Chalmers Mfg. Co. C
American Pulley Co. C
Atlanta Belting Co. C
Continental Gin Co., Industrial Div. C
Cotton—McCauley & Co., Inc. C
Crompton & Knowles Corp. ..... A, B
Curtis & Marble Machine Co. ..... B
Dayton Rubber Co. C
Dodge Mfg. Corp C
Gates Rubber Co. C
Greenville Steel & Foundry Co. C
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ..... A
ADV. PG. 155
League Mfg. Co., G. F. ..... A, B
Livermore Corp., H. F. ..... A, B
Matthews Equipment Co. ..... A, B
National Plastics, Inc. ..... A, B
Norris Bros. ..... A, B
Schmidt Mfg. Co. ..... A, B
Schmidt Mfg. Co. of S. C. ..... A, B
Wood's Sons Co., T. B. C

SHEETS—*Steel or Stainless Steel* (See Steel)

SHELLS (See Rolls)

SHELVES—*Steel, Bins & Racks*
Haertel Co., Walter
Jenkins Metal Shops
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Republic Steel Corp.
Tower Iron Works

SHIELDS—*Bobbin & Drivers*
BATSON CO., LOUIS P. ADV. PG. 112
Livermore Corp., H. F.
TEXTILE SHIELD CO., INC. ADV. PG. 106

SHOES—*Wooden Sole*
Stahmer Shoe Co.

SHREDDERS (See Pickers—Rag & Shoddy)

SHRINKAGE CONTROL AGENTS
Moretex Chemical Products, Inc.

SHRINKING MACHINES (See also "Sanforized" Machines)
GESSNER CO., DAVID ADV. PG. 135
INDUSTRIAL DRYER CORP. ADV. PG. 72
Morrison Machine Co.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Tower Iron Works
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118

SHUTTLE FUR (See Fur—Shuttle)

SHUTTLES
DRAPER CORP. ADV. PG. 1
Lowell Shuttle Co.
Norris Bros.
REINER, INC. ADV. PG. 145
Steel Heddle Mfg. Co.
Watson-Williams Mfg. Co.
Westinghouse Electric Corp., Micarta Div.

SILK SIZINGS (See Sizing Agents)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

SILK SOAKING AGENTS (See Soaking Agents)

SINGEING MACHINES
Piece-Goods ..... **A**
Warp ..... **B**
BATSON CO., LOUIS P ..... A
ADV. PG. 112
BIRCH BROS., INC. ..... A
ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ..... A
ADV. PGS. 114, 115
COCKER MACHINE & FOUNDRY CO. ..... B
ADV. PGS. 100, 101
INDUSTRIAL HEAT ENGINEERING CO ..... A, B
ADV. PG. 103
Kemp Mfg. Co., C. M. ..... A
Liberty Machine Co., Inc. ..... A
P&N Machine Co., Div. Peterson & Neville, Inc. ..... A
Red-Ray Mfg. Co. ..... A
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... A
ADV. PG. 62
Van Vlaanderen Machine Co. ..... A
Werner Machine Co. ..... A

SINKERS & DIVIDERS
Arrow Needle Co., Sub. Textile Machine Works
IVES CO., LOYAL T. ADV. PG. 142
TEXTILE MACHINE WORKS ADV. PGS. 140, 141
Torrington Co.

SINKS
Glasco Equipment Corp.
Jenkins Metal Shops

SIZE-PREPARATION APPARATUS
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
Griffin & Sons, Ira L.
Hibbert & Co., J.—Rep. by Atkinson, Haserick & Co.
Norcross Corp.
Roy Co., Milton
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
TEXTILE SHOPS ADV. PGS. 120, 121
West Point Foundry & Machine Co.

SIZERS—*Warp* (See Slashers)

SIZERS—*Yarn* (See Yarn-Sizing Machines)

SIZING AGENTS
American Aniline & Extract Co.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Borden Chemical Co., Div. Borden Co.
Bryant Chemical Corp.
Collodis, Inc.
Colton Chemical Co.
Delany & Co., Inc.
Dow Chemical Co.
DU PONT DE NEMOURS & CO., INC., E. I., ELECTROCHEMICALS DEPT. ADV. PG. 181
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Goodrich Chemical Co., B. F.
Hart Products Corp.
Hercules Powder Co.
Kali Mfg. Co.
Kelco Co.
Laurel Soap Mfg. Co.
Miller Corp., Harry
Milligan & Higgins Corp.
MONSANTO CHEMICAL CO., PLASTICS DIV. ADV. PGS. 174, 175
Moretex Chemical Products, Inc.
Morningstar-Paisley, Inc.
Nopco Chemical Co.
North, Inc., Frank G.
Nyanza Color & Chemical Co., Inc.
Penick & Ford, Ltd.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Reichhold Chemicals, Inc.
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Shawinigan Resins Corp.
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Standard Chemical Products, Inc.
Stein, Hall & Co., Inc.
Stodghill & Co.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

SKEIN-HANKING MACHINES (See Reels—Skeining)

SKEWERS
Baker Mfg. Co.
BATSON CO., LOUIS P. ADV. PG. 112
Hardwood Mfg. Co., Inc.
League Mfg. Co., G. F.
Norris Bros.
PARKS CO., M. H. ADV. PG. 166
Schmidt Mfg. Co. of S. C.
Whitin Machine Works

SKIDS (See Pallets & Skids)

SKINS—*Calf, Lamb & Sheep*
Atlanta Belting Co.
Baker Mfg. Co.
BATSON CO., LOUIS P. ADV. PG. 112
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.

SLASHERS (See also Yarn-Sizing Machines)
BATSON CO., LOUIS P. ADV. PG. 112
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
Hibbert & Co., J.—Rep. by Atkinson, Haserick & Co.
Kidde Textile Machinery Corp.
LANLY CO. ADV. PG. 108
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Ross Engineering, J. O., Div. Midland-Ross Corp.
SACO-LOWELL SHOPS ADV. PGS. 68-71
TEXTILE SHOPS ADV. PGS. 120, 121
Tower Iron Works
West Point Foundry & Machine Co.

SLATS
Picker ..... **A**
Reel & Conveyor ..... **B**
Bagshaw Co., W. H. ..... B
BATSON CO., LOUIS P. ..... A, B
ADV. PG. 112
Collins Bros. Machine Co. ..... B
Hardwood Mfg. Co., Inc. ..... A, B
HARWOOD & SON, GEO. S. ..... B
ADV. PG. 168
League Mfg. Co., G. F. ..... A
Link-Belt Co. ..... B
Main & Sons, Robt. A ..... A, B
SACO-LOWELL SHOPS ..... A
ADV. PGS. 68-71
Sargent's Sons Corp., C. G. ..... A
Schofield Co., Inc., Wm. ..... A, B
Smith Textile Apron Co., Inc. ..... A, B
Whitin Machine Works ..... A
YOUNG MACHINE CO., F. A. ..... A, B
ADV. PG. 78

SLITTERS—*Cloth*
Black-Clawson Co.
Eastman Machine Co.
Firsching & Son, Inc., J. A.
HILL MACHINE CO., E. F. ADV. PG. 193
HOBBS MFG. CO. ADV. PG. 161
PERKINS & SON INC., B. F. ADV. PG. 110
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ADV. PG. 158

SLIVER LAPPERS (See Lappers—Sliver)

SLUB CATCHERS
BATSON CO., LOUIS P. ADV. PG. 112
Collins Supply & Equipment Co.
INDUSTRIAL SAPPHIRE CO. ADV. PG. 159
Lazenby Co., F. A.
Parks-Cramer Co.
Universal Winding Co.

SLUBBING FRAMES
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
SACO-LOWELL SHOPS ADV. PGS. 68-71
Whitin Machine Works

SOAKING AGENTS (See also Soaps, Lubricants, etc.)
Antara Chemicals, Div. of General Aniline & Film Corp.
Bryant Chemical Corp.
Colloids, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Kali Mfg. Co.
Laurel Soap Mfg. Co.
Milligan & Higgins Corp.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Oakite Products, Inc.
Onyx Oil & Chemical Co.
Richmond Oil Soap & Chemical Co.
Scholler Bros., Inc.
Sonneborn Sons, Inc., L.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

SOAKING MACHINES—*Rayon & Silk* (See also Degumming Machines)
KLAUDER-WELDON-GILES MACHINE CO. ADV. PG. 113
Tower Iron Works

SOAPERS—*Cloth & Yarn*
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER INC. ADV. PG. 145
Greenville Steel & Foundry Co.
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Tower Iron Works

SOAPS—*Textile*
Alco Oil & Chemical Co.
Amalgamated Chemical Corp.
Arkansas Co.
Armour & Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Colgate-Palmolive Co.
CONCORD CHEMICAL CO. ADV. PG. 176
Dexter Chemical Corp.
Drew Co., E. F., Textile Chemicals Dept.
EMKAY CHEMICAL CO. ADV. PG. 180
Hart Products Corp.
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Richmond Oil Soap & Chemical Co.
Scher Bros.
Seydel-Woolley & Co.
Swift & Co., Soap Dept.
Wica Chemicals, Inc.

SODA ASH (See Sodium—Salts of—Carbonate)

SODAS—*Modified*
Columbia-Southern Chemical Corp.
Solvay Process Div., Allied Chemical Corp.

SODIUM HYPOSULFITE (See Antichlors)

SODIUM PRUSSIATE (See Sodium—Salts of—Ferrocyanide)

SODIUM—*Salts of*
Acetate ..... **A**
Alginate ..... **B**
Aluminate ..... **C**
Arsenate ..... **D**
Bicarbonate ..... **E**
Bichromate ..... **F**
Bilfluoride ..... **G**
Bisulfate ..... **H**
Borate ..... **I**
Carbonate ..... **J**
Chlorate ..... **K**
Chloride ..... **L**
Chlorite ..... **M**
Ferrocyanide ..... **N**
Fluoborate ..... **O**
Fluoride ..... **P**
Formaldehyde Sulfoxylate ..... **Q**
Formate ..... **R**
Hexametaphosphate ..... **S**
Hyrosulfite ..... **T**
Hydroxide (Caustic Soda) ..... **U**
Hypochlorite ..... **V**
Metaphosphate ..... **W**
Metasilicate ..... **X**
Nitrate ..... **Y**
Nitrite ..... **Z**
Orthosilicate ..... **AA**
Perborate ..... **BB**
Peroxide ..... **CC**
Phosphate, Dibasic ..... **DD**
Phosphate, Monobasic ..... **EE**
Phosphate, Tribasic ..... **FF**
Pyrophosphate ..... **GG**
Sesquicarbonate ..... **HH**
Sesquisilicate ..... **II**
Silicate ..... **JJ**
Stannate ..... **KK**
Sulfate (Glaubers Salt) ..... **LL**
Sulfide ..... **MM**
Tetraphosphate ..... **NN**
Allied Chemical Corp., Nitrogen Div. ..... Y

Ansul Chemical Co. ..... H
Antara Chemicals, Div. of General Aniline & Film Corp. ..... T
Arkansas Co. ..... Q
Becco Chemical Div., Food Machinery & Chemical Corp. ..... BB
Berkshire Color & Chemical Corp ..... J, T, Z, BB
Calgon Co. ..... W
Celanese Corp. of America ..... A
Ciba Co., Inc. ..... T
Columbia-Southern Chemical Corp. ..... E, F, J, U, HH, LL
Dow Chemical Co. ..... A, J, U, AA, JJ
DU PONT DE NEMOURS & CO., INC., E. I., ELECTRO-CHEMICALS DEPT. ..... A, E, F, G, H, I, J, P, Q, T, U, X, Y, Z, BB, CC, DD, FF, GG, JJ, KK, LL, MM
ADV. PG. 181
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ..... G, H, O, P, X, DD, FF, GG, JJ, LL
ADV. PG. 179
Harshaw Chemical Co. ..... L, O, KK
Hooker Electrochemical Co., Chemicals Div. ..... K, U, MM
International Salt Co., Inc. L
Kelco Co. ..... B
Monsanto Chemical Co., Organic Chemicals Div. ..... H, T, U, W, DD, EE, FF, GG
Morton Salt Co. L
Olin Mathieson Chemical Corp., Industrial Chemical Div. ..... E, J, M, U, V, Y
Pennsalt Chemicals Corp. ..... U
Philadelphia Quartz Co. ..... X, AA, II, JJ
Reichhold Chemicals, Inc. ..... Q
ROHM & HAAS CO., INC. ..... Q, T
ADV. PG. 185
Royce Chemical Co. ..... Q, T
Rumford Chemical Works ..... S, W, DD, FF, GG, NN
Scher Bros. ..... A, E, F, G, H, I, J, L, Q, T, BB, DD, EE, FF, GG, JJ, LL, NN
Solvay Process Div., Allied Chemical Corp. ..... E, F, J, L, U, Z, HH
Stauffer Chemical Co. ..... I, U
Stein, Hall & Co., Inc. ..... B
TENNESSEE CORP. ..... T
ADV. PG. 186
Union Carbide Chemicals Co., Div. Union Carbide Co. ..... A
Victor Chemical Works ..... DD, EE, FF, GG, NN
West Point Foundry & Machine Co. ..... A, B, C
WOLF & CO., JACQUES ..... Q, T
ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ..... E, J, U
ADV. PGS. 172, 173

SODIUM THIOSULFATE (See Antichlors)

SOFTENERS—*Fabric* (See also Sulfonated Fatty Alcohols, etc.)
Amalgamated Chemical Corp.
American Aniline & Extract Co.
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Armour & Co.
Arnold, Hoffman & Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Ciba Co., Inc.
Colloids, Inc.
Dexter Chemical Corp.
Dow Corning Corp.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Emery Industries, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Geigy Chemical Corp.
Glyco Products Co., Inc.
Hart Products Corp.
Houghton & Co., E. F.
Kali Mfg. Co.
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
Mona Industries, Inc.
Morningstar-Paisley, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
North, Inc., Frank G.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Procter & Gamble Co., Industrial Specialty Sales Dept.
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Reichhold Chemicals, Inc.
Richmond Oil Soap & Chemical Co.
ROHM & HAAS CO., INC. ADV. PG. 185
Royce Chemical Co.
Rumford Chemical Works
Sandoz, Inc.
Scher Bros.
Scholler Bros., Inc.
SEMET-SOLVAY PETROCHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 183
Seydel-Woolley & Co.
SIDDALL CO., INC., GEO. F. ADV. PG. 184
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Stodghill & Co.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Chemical Works
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

SOLENOIDS
ALLEN-BRADLEY CO. ADV. PG. 3rd Cover
Cutler-Hammer, Inc.
General Electric Co.
Hays Mfg. Co.
LIVINGSTON & HAVEN, INC. ADV. PG. 94

SOLUBLE STARCH (See Starches—Converted)

SOLVENTS
Barrett Div., Allied Chemical Corp.
Borden Co., Monomer Dept.
Celanese Corp. of America
Charlotte Chemical Laboratories, Inc.
Columbia Southern Chemical Corp.
Diamond Alkali
Dow Chemical Co.
DU PONT DE NEMOURS & CO., INC., E. I., ELECTRO-CHEMICAL DEPT. ADV. PG. 181
Eastman Chemical Products, Inc.
Esso Standard Oil Co.
Gulf Oil Co.
Hooker-Electrochemical Co.
Laurel Soap Co.
Miller Corp., Harry
Monsanto Chemical Co.
National Aniline Div., Allied Chemical Corp.
Oakite Products, Inc.
Olin Mathieson Chemical Co.
Scholler Bros., Inc.
Shell Oil Co.
Sun Oil Co.
Union Carbide Chemicals Co.
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

SPECTROPHOTOMETER (See Color Comparators)

SPEED RECORDERS (See Tachometers)

SPEEDERS (See Roving Frames)

SPINDLE ADAPTERS (See Adapters—Spindle)

SPINDLE BRAKES (See Brakes—Spindle)

SPINDLE-OILING MACHINES (See also Lubricators—Machine)
Jenkins Metal Shops
SACO-LOWELL SHOPS ADV. PGS. 68-71

SPINDLES
Cotton ..... A
Rayon & Silk ..... B
Scavenger C
Wool ..... D
Worsted ..... E
BATSON CO., LOUIS P. ..... B, C
ADV. PG. 112
Collins Bros. Machine Co. ..... A, D, E
DAVIS & FURBER MACHINE CO. ..... D
ADV. PG. 154
DRAPER CORP. ..... A, B, E
ADV. PG. 1
Fletcher Works ..... B, E
GASTONIA ROLLER, FLYER & SPINDLE CO. ..... A, B, D, E
ADV. PG. 157
Gossett Machine Works, Inc. ..... A, E
IDEAL MACHINE SHOPS ..... A
ADV. PG. 86
Marquette Div., Curtiss-Wright Corp. ..... A, B, D, E
PLATT BROS. (SALES) LTD.—Rep. by **ATKINSON, HASERICK & CO., INC.** ..... A, B, D, E
ADV. PG. 63
Roberts Co. ..... A, B, E
SACO-LOWELL SHOPS ..... A, B, D, E
ADV. PGS. 68-71
Universal Winding Co. ..... B
SANT' ANDREA NOVARA—Rep. by **ERNEST L. FRANKL** ..... E
ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by **ATKINSON, HASERICK & CO.** ..... A, E
ADV. PG. 62
Whitin Machine Works ..... A, B, D, E
YOUNG MACHINE CO., F. A. ..... A, B
ADV. PG. 78

SPINNERETTES
American Hard Rubber Co.
Baker & Co.
Bishop & Co.

SPINNING FRAMES
Cotton System ..... A
Wool ..... B
Worsted C
DAVIS & FURBER MACHINE CO. ..... B
ADV. PG. 154
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... A, B, C
ADV. PG. 63
Roberts Co. ..... A, C
SACO-LOWELL SHOPS ..... A, B, C
ADV. PGS. 68-71
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL C
ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... A, C
ADV. PG. 62
Whitin Machine Works ..... A, B, C
YOUNG MACHINE CO., F. A. ..... A
ADV. PG. 78

SPINNING FRAME SUPPLIES—*Main Head*
BATSON CO., LOUIS P. ADV. PG. 112
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Dixie Spindle & Flyer Co.
Dixon Corp.
Gossett Machine Works, Inc.
Jenkins Metal Shops
Medley Mfg. Co.
Progressive Engineering, Inc.
Roberts Co.
Whitinsville Spinning Ring Co.
YOUNG MACHINE CO., F. A. ADV. PG. 78

SPINNING OILS (See Lubricants—Fiber & Yarn)

SPLITTERS
Pile-Fabric ..... A
Tubular Knit Goods ..... B
Warp (See Doublers—Warp & Splitters)
BIRCH BROS., INC. ..... B
ADV. PG. 137
Firsching & Son, Inc., J. A. ..... A, B
UTICA NOVELTY & MILL SPECIALTY CO. ..... B
ADV. PG. 158
TUBULAR TEXTILE MACHINERY CORP. ..... B
ADV. PG. 118

SPONGING MACHINES (See Shrinking Machines)

SPOOLERS
Cotton ..... A
Jack ..... B
Narrow-Fabric C
Filament Yarn ..... D
Thread ..... E
Woolen & Worsted ..... F
Barber-Colman Co. ..... A, D
Collins Bros. Machine Co. ..... A, E
DAVIS & FURBER MACHINE CO. ..... B, F
ADV. PG. 154
Fletcher Works ..... C, E
Kidde Textile Machinery Corp. ..... D
UTICA NOVELTY & MILL SPECIALTY CO. C
ADV. PG. 158
Whitin Machine Works ..... A, B, D

SPOOLS (See also Bobbins)
Carpet & Rug ..... A
Fibre ..... B
Jack C
Lace ..... D
Metal (See also listings by use) ..... E
Ribbon ..... F
Thread ..... G
Wood (See also listings by use) ..... H
American Paper Products Co. ..... A, B, D, F, G
American Pulley Co. ..... B, C
BATSON CO., LOUIS P. ..... A, B, C, D, E, F, G, H
ADV. PG. 112
Cloverleaf Freeland Corp. ..... B, C, E, G
ENGINEERED PLASTICS, INC. ..... B, E
ADV. PG. 74
Hardwood Mfg. Co., Inc. ..... H
Hunter Machine Co., James C
Jenkins Metal Shops ..... B, C, E
League Mfg. Co., G. F. ..... H
LESTERSHIRE SPOOL DIV., NATIONAL VULCANIZED FIBRE CO. ..... B, C, E, H
ADV. PG. 157
National Vulcanized Fibre Co. ..... B, C, E, H

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

NORTH WATERFORD SPOOL CO. ..... H
ADV. PG. 158
Paramount Oilless Bearing Co. ..... H
PARKS CO., M. H. ..... A, C, E, H
ADV. PG. 166
SONOCO PRODUCTS CO. ..... B, D, G
ADV. PG. 54

SPOTPROOFING AGENTS
Apex Chemical Co.
Arkansas Co.
Bryant Chemical Corp.
Dow Corning Corp.
Du Pont de Nemours & Co., Inc., E. I.
Emkay Chemical Co.
Hart Products Corp.
Metro-Atlantic, Inc.
Nopco Chemical Co.
North, Inc., Frank G.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
Scholler Bros., Inc.
Standard Chemical Products, Inc.
Wica Chemicals, Inc.

SPOTPROOFING MACHINES

SPOTTING AGENTS
Amalgamated Chemical Corp.
Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Berkshire Color & Chemical Corp.
Dexter Chemical Corp.
Dow Chemical Co.
Esso Standard Oil Co.
Hart Products Corp.
Laurel Soap Mfg. Co.
POLYMER INDUSTRIES ADV. PG. 184
Richmond Oil Soap & Chemical Co.
Selig Co.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

SPRAYING MACHINES (See Dewing Machines)

SPREADERS
Cloth-Expanding ..... A
Gill or Roll ..... B
Loom C
BIRCH BROS., INC. ..... A
ADV. PG. 137
Curtis & Marble Machine Co. ..... A
DRAPER CORP. C
ADV. PG. 1
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ..... A
ADV. PG. 145
Firsching & Son, Inc., J. A. ..... A
GESSNER CO., DAVID ..... B
ADV. PG. 135
Hunter Machine Co., James ..... A
Jenkins Metal Shops ..... A
JENKINS SONS, M. W. ..... A
ADV. PG. 154
Livermore Corp., H. F. C
MT. HOPE MACHINERY CO. ..... A
ADV. PG. 105
RIGGS & LOMBARD CO. ..... A
ADV. PGS. 122, 123
TUBULAR TEXTILE MACHINERY CORP. ..... A
ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ..... A
ADV. PG. 154
Werner Machine Co. ..... A

SPRING-BEARD NEEDLES (See Needles—Spring-Beard)

SPRINGS—*Resort*
MITCHELL-BISSELL CO. ADV. PG. 77

SPRINKLER SYSTEMS
Grinnell Co., Inc.
McPherson Co.

SPROCKETS—*Chain*
Chain Belt Co.
Diamond Chain & Mfg. Co.
Dodge Mfg. Corp.
Link-Belt Co.
Morse Chain Co.
Union Chain & Mfg. Co.
Werner Machine Co.
West Point Foundry & Machine Co.
Whitin Machine Works

SQUEEZERS—*Cloth* (See also Quetches)
BIRCH BROS., INC. ADV. PG. 137
GESSNER CO., DAVID ADV. PG. 135
HUNT MACHINE CO., RODNEY ADV. PG. 95
Hunter Machine Co., James
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Tower Iron Works
Verdiun Machine Corp.

STAINS—*Fugitive* (See Tints)

STAMPINGS—*Metal*
BATSON CO., LOUIS P. ADV. PG. 112
Jenkins Metal Shops
Larsen Tool & Stamping Co.
Republic Steel Corp.
Royersford Needle Works, Inc.
Schmidt Mfg. Co. of S. C.
TEXTILE SHIELD CO., INC. ADV. PG. 106

STANNIC CHLORIDE (See Tin—Salts of—Chloride)

STAPLERS (See Wire-Stitching Machines)

STARCH MANGLES (See Mangles—Cloth)

STARCHES (See also Gums—British Dextrin, etc.)

STARCHES—*Converted*
Anheuser-Busch, Inc.
Keever Starch Co.
Morningstar-Paisley, Inc.
National Starch Products, Inc.
Penick & Ford, Ltd.
STALEY MFG. CO., A. E. ADV. PG. 178
Stein, Hall & Co., Inc.

STARCHES—*Natural*
Arrowroot ..... A
Corn ..... B
Potato C
Rice ..... D
Sage ..... E
Wheat ..... F
Anheuser-Busch, Inc. ..... B
Bryant Chemical Corp. ..... C, D, F
Clinton Corn Processing Co. ..... B
Corn Products Sales Co. ..... B
Hercules Powder Co. ..... F
HUBINGER CO. ..... B
ADV. PG. 176
Keever Starch Co. ..... B, F
Morningstar-Paisley, Inc. ..... A, C, D, E
National Starch Products, Inc. ..... B
Penick & Ford, Ltd. ..... B
STALEY MFG. CO., A. E. ..... B
ADV. PG. 178
Stein, Hall & Co., Inc. ..... A, B, C, D, E, F
Union Sales Corp. ..... B

STARTERS—*Motor* (See Controls—Automatic & Manual Motor)

STATIC ELIMINATORS—*Chemical* (See Anti-Static Agents)

STATIC NEUTRALIZERS & ELIMINATORS
AMERICAN LAVA CORP. ADV. PG. 97
Apex Chemical Co.
BATSON CO., LOUIS P. ADV. PG. 112
Doyle Co., J. E.
Herbert Products, Inc.
Kidde Textile Machinery Corp.
Matthews Equipment Co.
Nopco Chemical Co.
Portland Co.
REINER, INC. ADV. PG. 145
SIMCO CO. ADV. PG. 112
Standard Chemical Products, Inc.
Sticht Co., Inc., Herman
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
U. S. Radium Corp.

STEAM BOILERS (See Boilers—Steam)

STEAM TURBINES (See Turbines—Steam)

STEAMING MACHINES—*Knitted Cloth*
Greenville Steel & Foundry Co.
Kastrinsky Machine Co., Inc.
Liberty Machine Co., Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118
UTICA NOVELTY & MILL SPECIALTY CO. ADV. PG. 154
Werner Machine Co.

STEAMING MACHINES—*Mantle* (See Decating Machines)

STEAMING MACHINES—*Woven Cloth* (See Boxes—Steamer; Dryers—Piece Goods; Decating Machines; Conditioners—Yarn)

STEARIC ACID (See Acids—Fatty)

STEEL—*Stainless*
Allegheny Ludlum Steel Corp.
Armco Steel Corp.
Atlantic Steel Co.
Babcock & Wilcox Co., Tubular Products Div.
Carpenter Steel Co.
Crucible Steel Co. of America
Eastern Stainless Steel Corp.
Republic Steel Corp.
Ryerson & Son, Inc., Joseph

STEEL (Including Alloys)
Acme Steel Co.
Allegheny Ludlum Steel Corp.
Armco Steel Corp.
Atlantic Steel Co.
Babcock & Wilcox Co., Tubular Products Div.
Crucible Steel Co. of America
Eastern Stainless Steel Corp.
Republic Steel Corp.
Ryerson & Son, Inc., Joseph

STENCIL-CUTTING MACHINES (See Cutting Machines—Stencil)

STICKS—*Dye* (See Dyesticks)

STICKS—*Picker*
BATSON CO., LOUIS P. ADV. PG. 112
Dayton Rubber Co.
DRAPER CORP. ADV. PG. 1
Hardwood Mfg. Co., Inc.
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Norris Bros.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
Steel Heddle Mfg. Co.

STIFFENING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Borden Chemical Co., Div. Borden Co.
Bryant Chemical Corp.
Ciba Co., Inc.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
EMKAY CHEMICAL CO. ADV. PG. 180
Goodrich Chemical Co., B. F.
Hart Products Corp.
Kali Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry
National Starch Products, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Reichhold Chemicals, Inc.
Richmond Oil Soap & Chemical Co.
Scher Bros.
Scholler Bros., Inc.
Standard Chemical Products, Inc.
Stein, Hall & Co., Inc.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

STIRRERS (See Mixers—Mechanical)

STIRRUPS & LEVERS (See Saddles)

STITCHERS (See Wire-Stitching Machines)

STOKERS
Babcock & Wilcox Co.
Erie City Iron Works

STONEWARE—*Acidproof*
General Scientific Equipment Co.

STRAIGHTENERS—*Filling* (See Filling-Straightening Devices)

STOP-MOTIONS

Electronic ..... A
Drop-Wire Electrical ..... B
Drop-Wire Mechanical C
Knockoff, Spoon, Mechanical ..... D
Knitting Machine ..... E
Pneumatic ..... F

ADAMS, INC. ..... B
ADV. PG. 76
CAROLINA KNITTING MACHINE CO. ..... E
ADV. PG. 144
COBBLE BROS. MACHINERY CO., INC. ..... B
ADV. PG. 91
COCKER MACHINE & FOUNDRY CO. ..... B
ADV. PGS. 100, 101
Crawford Mfg. Co. ..... B, C, E
Crompton & Knowles Corp. ..... C, D
DRAPER CORP. ..... B, C, D
ADV. PG. 1
Fletcher Works ..... A
GASTONIA ROLLER, FLYER & SPINDLE CO. ..... D
ADV. PG. 157
Holdsworth Mfg. Co., Inc. ..... D
Kidde Textile Machinery Corp. ..... B, E
Lindly & Co., Inc. ..... B, E
McBride & Co., Edw. J. ..... A
Pneumafil Corp. ..... F
REINER, INC. ..... B
ADV. PG. 145
SOUTHERN MACHINE CO. ..... B, C
ADV. PG. 162
Stop-Motion Devices Corp. ..... B, E
Strandberg Engineering Lab., Inc. ..... B
Whitin Machine Works C

STRAINERS—*Water*

Anderson Co., V. D.
Armstrong Machine Works
Clark Mfg. Co.
Hays Mfg. Co.
Spraying Systems Co.
Yarnall-Waring Co.

STRANDING MACHINES (See Cordage Machines or Strapping Machines—Wire)

STRAPPING—*Box & Carton*

Acme Steel Co.
Brainard Steel Div., Sharon Steel Corp.
Signode Steel Strapping Co.
Stanley Works, Stanley Steel Strapping Div.

STRAPPING

Loom (See Straps—Loom)
Mill (See Straps—Loom)
Steel (See Strapping—Box & Carton)
Wire (See Strapping—Box & Carton)

STRAPS—*Loom* (Includes Bumper, Check, Dobby, Harness, Hold-Up, Jack, Picker and Spindle Bumper)

Atlanta Belting Co.
Baker Mfg. Co.
BATSON CO., LOUIS P. ADV. PG. 112
Dayton Rubber Co.
DRAPER CORP. ADV. PG. 1
Extremultus, Inc.
GRATON & KNIGHT CO. ADV. PG. 158
JACOBS, E. H., NORTHERN AND SOUTHERN DIV., BULLARD CLARK CO. ADV. PG. 155
Matthews Equipment Co.
Rhoads & Sons, J. E.
Schmidt Mfg. Co.
Schmidt Mfg. Co. of S. C.
Slip-Not Belting Corp.
Southern Belting & Transmission Co.

STRETCHERS

Bristle ..... A
Cloth-Belt ..... B
BIRCH BROS., INC. ..... A, B
ADV. PG. 137
Collins Bros. Machine Co. ..... B

STRIPPERS—*Bobbin* (See Bobbin-Stripping Machines)

STRIPPERS—*Card*

Abington Textile Machy. Works
Ashworth Bros., Inc.
Parks-Cramer Co.
SACO-LOWELL SHOPS ADV. PGS. 68-71
Whitin Machine Works

STRIPPING AGENTS (See also under individual headings; Soldium—Salts of, etc.)

Antara Chemicals, Div. of General Aniline & Film Corp.
Arkansas Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Charlotte Chemical Laboratories, Inc.
Ciba Co., Inc.
Dexter Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
Metro-Atlantic, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Oakite Products, Inc.
Onyx Oil & Chemical Co.
Reichhold Chemicals, Inc.
ROHM & HAAS CO., INC. ADV. PG. 185
Royce Chemical Co.
Scher Bros.
Standard Chemical Products, Inc.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
WOLF & CO., JACQUES ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

STROBOSCOPES

Boulin Instrument Corp.
General Radio Co.

SUEDING MACHINES

MENSCHNER, JOANNES—Rep. by ROBERT REINER, INC. ADV. PG. 145

SUGAR OF LEAD (See Lead—Salts of—Acetate)

SULFONATED FATTY ALCOHOLS (See Fatty Alcohol Sulfates or Emulsifying Agents)

SULFONATED OILS (See Oils—Fiber Process)

SULFUR

Du Pont de Nemours & Co., Inc., E. I.
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Stauffer Chemical Co.

SULFUR COLORS

American Cyanamid Co., Organic Chemicals Div.
Du Pont de Nemours & Co., Inc., E. I.
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ADV. PG. 187
National Aniline Div., Allied Chemical Corp.
Nyanza Color & Chemical Co., Inc.
Sandoz, Inc.

SULFUR DIOXIDE (See Antichlors)

SULFUR DYES (See Dyes)

SULFURIC ACID (See Acids)

SULFUROUS ACID (See Antichlors or Acids)

SWEEPSTICKS (See Sticks—Picker)

SWIFTS (See Bobbins—Bottle, or Reels—Skeining)

SWITCHES

Automatic Transfer (See Circuit Breakers)
Drum (See Controls—Automatic & Manual Motor)
Electric ..... A
Snap-Action (Explosion & Splash-Proof) ..... B
Snap-Action (Limit, Toggle, etc.) C
Transfer (See Circuit Breakers)

ALLEN-BRADLEY CO. ..... A, B, C
ADV. PG. 3rd Cover
Bristol Co. ..... A
Bulldog Electric Products Co. ..... A
Cutler-Hammer, Inc. ..... A, B, C
General Electric Co. ..... A, B, C
Micro Switch Div., Minneapolis-Honeywell Regulator Co. ..... A, B, C
Minneapolis-Honeywell Regulator Co. ..... B
Square D Co. ..... A, B, C
Westinghouse Electric Corp., General Industries Div. ..... A, B, C

TABLES

Burling ..... A
Cutting ..... B
Feed C
Inspection (See Inspection Machines)
Mending—Carpet ..... D
Work (See Benches—Stands, Work)

Aldrich Machine Works C
BIRCH BROS., INC. ..... A
ADV. PG. 137
Cutting Room Appliances Corp. ..... B
FISHER MFG. CO. ..... A
ADV. PG. 111
McBride, Inc., Edw. J. ..... A, D
SACO-LOWELL SHOPS C
ADV. PGS. 68-71
Ginsberg Machine Co., Inc. ..... B
Whitin Machine Works C

TACHOMETERS

Centrifugal (See Tachometers—Mechanical)
Chronometric (See Tachometers—Mechanical)
Electric ..... A
Hand (See Tachometers—Mechanical)
Mechanical ..... B

Boulin Instrument Corp. ..... B
Bristol Co. ..... A
Stewart-Warner Corp. ..... A, B
Durant Mfg. Co. ..... B
Foxboro Co. ..... A, B
General Electric Co. ..... A
General Radio Co. ..... A
Griffin & Sons, Ira L. ..... B
Jones Motrola Corp. ..... B
Minneapolis-Honeywell Regulator Co., Industrial Div. ..... A
Scherr Co., Geo. ..... B
Sticht Co., Inc., Herman ..... A, B
Strandberg Engineering Lab., Inc. ..... A
Weston Instruments, Div. Daystrom, Inc. ..... A
West Point Foundry & Machine Co. ..... B

TACKING MACHINES

BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
MERROW MACHINE CO. ADV. PG. 134

TALLOW

Archer-Daniels-Midland Co.
Nopco Chemical Co.
North, Inc., Frank G.
Standard Chemical Products, Inc.

TANKS

Copper & Brass ..... A
Corrosion-Resisting (See also Tanks—Copper & Brass) ..... B
Glass-Lined C
Iron & Steel ..... D
Wood ..... E

ALLEN SON'S CO., WM., DIV. O. G. KELLEY & CO. ..... B, D, E
ADV. PG. 128
American Hard Rubber Co. ..... B
BATSON CO., LOUIS P. ..... E
ADV. PG. 112
BIRCH BROS., INC. ..... A, C, D
ADV. PG. 137
Burlington Engineering Co., Inc. ..... B, D
Caldwell Co., W. E. ..... B, D, E
CARROLL & CO., J. E. ..... B
ADV. PG. 102
Cole Mfg. Co., R. D. ..... A, B, D
Durion Co., Inc. ..... B
Electro Chemical Eng. & Mfg. Co. ..... B, D
FISHER MFG. CO. ..... B, D
ADV. PG. 111
Gaston County Dyeing Machine Co. ..... B
Gates Rubber Co. ..... B
Glasco Equipment Corp. ..... B, D
Greenville Steel & Foundry Co. ..... B, D
HUNT MACHINE CO., RODNEY ..... B
ADV. PG. 95
Hunter Machine Co., James ..... B, D
INDUSTRIAL COATINGS ..... B
ADV. PG. 167
Jenkins Metal Shops ..... A, B, D
KLAUDER WELDON GILES MACHINE CO. ..... B
ADV. PG. 113
LEWIS CO., G. B. ..... B
ADV. PG. 168
Lucey Boiler & Mfg. Co. ..... B, D
Paddock Co., J. C. ..... B, D
Pako Corp. ..... B
Pfaudler Co., Div. Pfaudler Permutit, Inc. ..... B, C
Portland Copper & Tank Works ..... A, B, D
RIGGS & LOMBARD CO. ..... B
ADV. PGS. 122, 123
Roy Co., Milton ..... B, C, D
Ryerson & Son, Inc., Joseph ..... D
SIMS METAL WORKS ..... A, B, D
ADV. PG. 117
TEXTILE SHOPS ..... B, D
ADV. PGS. 120, 121
Tower Iron Works ..... B, D
TURBO MACHINE CO. ..... B
ADV. PGS. 138, 139
Venango Engineering Co., Inc. ..... D
Woolford Wood Tank Mfg. Co. ..... E

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

TAPE
Gummed-Paper, Rubber, Plastic, or Friction ..... A
Pressure-Sensitive ..... B
Spinning and Twisting C
Behr-Manning Co. ..... B
Bemis Bro. Bag Co. ..... B
BOOTH CO., BENJAMIN C
ADV. PG. 75
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co. ..... A
Canton Containers, Inc. C
Dayton Rubber Co. ..... A
DAVIS & FURBER MACHINE CO. ..... D
ADV. PG. 154
Greensboro Loom Reed Co., Inc. C
Johns-Manville Corp. ..... A, B
Kenyon & Sons, Inc. C
Lambeth Rope Co. C
Matthews Equipment Co. ..... B
Minnesota Mining & Mfg. Co. ..... B
MT. HOPE MACHINERY CO. ..... A
ADV. PG. 105
Permacel Tape Corp. ..... B
SOUTHERN WEAVING CO. C
ADV. PG. 168
STANLEY NARROW FABRICS C
ADV. PG. 164
U. S. Rubber Co., Mechanical Goods Div. ..... A, B
Whitin Machine Works ..... D

TAPE CONDENSERS
DAVIS & FURBER MACHINE CO. ADV. PG. 154
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Whitin Machine Works

TAPES—*Condenser*
BOOTH CO., BENJ. ADV. PG. 75
DAVIS & FURBER MACHINE CO. ADV. PG. 154
Dayton Rubber Co.
Extremultus, Inc.
GRATON & KNIGHT CO. ADV. PG. 158
Johns-Manville Corp.
HAY CO., INC., JAMES ADV. PG. 163
HOWARD BROS. MFG. CO. ADV. PG. 73
Rhoads & Sons, J. E.
Whitin Machine Works

TAPE DISPENSERS
Behr-Manning Co.
Minnesota Mining & Mfg. Co.

TAPIOCA FLOUR
Bryant Chemical Corp.
Griffin & Sons, Ira L.
Morningstar-Paisley, Inc.
Stein, Hall & Co., Inc.

TAR & PAINT REMOVERS
Arkansas Co.
Burkart Schier Chemical Co.
CONCORD CHEMICAL CO. ADV. PG. 176
Dexter Chemical Corp.
Dow Chemical Co.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
Hillyard Chemical Co.
Horn Co., Inc.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Minnesota Paints, Inc.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Oakite Products, Inc.
Philadelphia Quartz Co.
POLYMER SOUTHERN, INC. ADV. PG. 184
Rumford Chemical Works
Standard Chemical Products, Inc.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.

TARPAULINS
BATSON CO., LOUIS P. ADV. PG. 112
Canton Containers, Inc.
Daniels, Inc., C. R.
Visking Co.

TARTAR EMETIC
Apex Chemical Co.
Stauffer Chemical Co.

TARTARIC ACID (See Acids)

TEASELING MACHINES (See Gigs)

TEMPLES—*Loom*
BATSON CO., LOUIS P. ADV. PG. 112
DRAPER CORP. ADV. PG. 1
Crompton & Knowles Corp.

TENSIOMETERS (See also Testers—Tension)
Kidde Textile Machinery Corp.
Matthews Equipment Co.
Tensitron, Inc.

TENSIONS
Knitting-Machine ..... A
Open Width or Rope ..... B
Warper and/or Warper Creel C
Winding-Machine ..... D
Ambler Textile Machinery Co. ..... A, C, D
BATSON CO., LOUIS P. ..... B, C
ADV. PG. 112
BIRCH BROS., INC. ..... B, D
ADV. PG. 137
Cameron Machine Co. ..... D
CAROLINA KNITTING MACHINE CO. ..... A
ADV. PG. 144
COCKER MACHINE & FOUNDRY CO. ..... A
ADV. PGS. 100, 101
Fidelity Machine Co. ..... A
FOSTER MACHINE CO. ..... C, D
ADV. PGS. 66, 67
Greenville Steel & Foundry Co. ..... B
Kidde Textile Machinery Corp. ..... A, C, D
Lazenby Co., F. A. ..... D
Lindly & Co., Inc. C
Matthews Equipment Co. ..... A, D
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ..... B
ADV. PGS. 126, 127
MT. HOPE MACHINERY CO. ..... B, C, D
ADV. PG. 105
P&N Machine Co., Div. Peterson & Neville, Inc. ..... B
REINER, INC., ROBERT ..... A, C, D
ADV. PG. 145
Reliance Electric & Engineering Co. ..... B, C, D
Stop-Motion Devices Corp. ..... A
SUPREME KNITTING MACHINE CO. ..... A
ADV. PG. 143
Tensitron, Inc. ..... C, D
Universal Winding Co. ..... D
Werner Machine Co. ..... B, E
Whitin Machine Works ..... D

TENTER FRAMES—*Cloth*
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
COBBLE BROS. MACHINERY CO., INC. ADV. PG. 91
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ADV. PG. 145
Gaston County Dyeing Machine Co.
GESSNER CO., DAVID ADV. PG. 135
Hunter Machine Co., James
Kenyon & Sons, Inc., D. R.
Krantz Soehne—Rep. by Ernest L. Frankl
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
McCreary Machine Works, Inc.
Morrison Machine Co.
SOUTHERN TEXTILE WORKS ADV. PG. 164
Van Vlaanderen Machine Co.
Werner Machine Co.
Winsor & Jerauld Mfg. Co.

TENTER PLATES
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
FAMATEX G.M.B.H.—Rep. by ROBT. REINER, INC. ADV. PG. 145
Hunter Machine Co., James
Kenyon & Sons, Inc., D. R.
Main & Sons, Robt. A.
MARSHALL & WILLIAMS CORP. ADV. PGS. 132, 133
SOUTHERN TEXTILE WORKS ADV. PG. 164
Van Vlaanderen Machine Co.

Be sure to mention
FACT FILE
when writing to these companies

TENTER TRACKS
BUTTERWORTH & SONS CO., H. W. ADV. PGS. 114, 115
Hunter Machine Co., James
SOUTHERN TEXTILE WORKS ADV. PG. 164
Werner Machine Co.

TESTERS—*Abrasion*
ATLAS ELECTRIC DEVICES CO. ADV. PG. 64
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
Suter Co., Alfred
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Ball Bursting*
SCOTT TESTERS, INC. ADV. PG. 94

TESTERS—*Bobbin*
Shore Instrument & Mfg. Co., Inc.
Whitin Machine Works

TESTERS—*Chlorine Retention*
ATLAS ELECTRIC DEVICES CO. ADV. PG. 64
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98

TESTER—*Cohesion*
TENSION-RITE INDUSTRIES ADV. PG. 92

TESTERS—*Color Fastness*
ATLAS ELECTRIC DEVICES CO. ADV. PG. 64
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Color Matching* (See Color-Matching Equipment)

TESTERS—*Compressibility*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
Instron Engineering Corp.
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Cotton Lap*
SACO-LOWELL SHOPS ADV. PGS. 68-71
SPECIAL INSTRUMENTS LAB., INC. ADV. PG. 194
THOMASON TEXTILE SERVICE, INC. ADV. PG. 194
Uster Corp.

TESTERS—*Density*
Kidde Textile Machinery Corp.
SHEFFIELD CORP. ADV. PG. 96
Shore Instrument & Mfg. Co., Inc.

TESTERS—*Electrolytic Alkali Solution*
Industrial Instrument Co.

TESTERS—*Fiber Fineness*
SHEFFIELD CORP. ADV. PG. 96
SPECIAL INSTRUMENTS LAB., INC. ADV. PG. 194

TESTERS—*Fiber Length*
SPECIAL INSTRUMENTS LAB., INC. ADV. PG. 194
Suter Co., Alfred
Uster Corp.

TESTERS—*Flammability*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Human Eye*
Macbeth Corp.

TESTERS—*Hydrogen-Ion* (See Instruments—pH *Indicator*)

TESTERS—*Moisture*
Kearny Mfg. Co., Inc.
Moisture Register Co.
Mona Industries, Inc.
U. S. TESTING CO., INC. ADV. PG. 192
Weston Instruments, Div. Daystrom, Inc.

TESTERS—*Nepping*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
SHEFFIELD CORP. ADV. PG. 96
WRIGHT MACHINERY CO. DIV. ADV. PG. 98

TESTERS—*Permeability*
Gurley, Y. & L. E.
SPECIAL INSTRUMENTS LAB., INC. ADV. PG. 194
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*pH* (See Instruments—pH Indicator)

TESTERS—*Pilling*
ATLAS ELECTRIC DEVICES CO. ADV. PG. 64
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
Fabric Development Tests
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Pliability*
Fabric Development Tests
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Roving*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
SCOTT TESTERS, INC. ADV. PG. 94
Suter Co., Alfred
Universal Winding Co.
Uster Corp.

TESTERS—*Shrinkage*
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Shuttle*
Schmidt Mfg. Co. of S. C.
TENSION-RITE INDUSTRIES ADV. PG. 92

TESTERS—*Sliver*
SACO-LOWELL SHOPS ADV. PGS. 68-71
Suter Co., Alfred
Universal Winding Co.
Whitin Machine Works

TESTERS—*Stiffness*
Fabric Development Tests
Gurley, Y. & L. E.
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Tearing*
SCOTT TESTERS, INC. ADV. PG. 94
Suter Co., Alfred
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Tensile Strength & Elongation*
Instron Engineering Corp.
SCOTT TESTERS, INC. ADV. PG. 94
SPECIAL INSTRUMENTS LAB., INC. ADV. PG. 194
Suter Co., Alfred
U. S. TESTING CO., INC. ADV. PG. 192
Uster Corp.

TESTERS—*Tension*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
Fidelity Machine Co.
Instron Engineering Corp.
Kidde Textile Machinery Corp.
Schmidt Mfg. Co. of S. C.
TENSION-RITE INDUSTRIES ADV. PG. 92
Tensitron, Inc.
Universal Winding Co.
Uster Corp.

TESTERS—*Thermal Conductivity*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Thickness*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98

TESTERS—*Twist*
SCOTT TESTERS, INC. ADV. PG. 94
Suter Co., Alfred
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Washfastness*
ATLAS ELECTRIC DEVICES CO. ADV. PG. 64
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Water Hardness*
American Water Softener Co.
Calgon Co.
Hungerford & Terry, Inc.

TESTERS—*Weathering*
ATLAS ELECTRIC DEVICES CO. ADV. PG. 64

TESTERS—*Winding Density*
Kidde Textile Machinery Corp.
Shore Instrument & Mfg. Co., Inc.

TESTERS—*Wrinkle*
CUSTOM SCIENTIFIC INSTRUMENT, INC. ADV. PG. 98
U. S. TESTING CO., INC. ADV. PG. 192

TESTERS—*Yarn Evenness*
Lindly & Co., Inc.
SCOTT TESTERS, INC. ADV. PG. 94
SPECIAL INSTRUMENTS LAB., INC. ADV. PG. 194
Suter Co., Alfred
U. S. TESTING CO., INC. ADV. PG. 192
Universal Winding Co.
Uster Corp.

TESTING LABORATORIES—(See Laboratories—Testing)

TETRACHLORETHYLENE (See Solvents)

TETRAHYDROFURFURYL ALCOHOL (See Solvents)

TETRALIN (See Solvents)

TETRAPHOSPHATE (See Sodium—Salts of—Tetraphosphate)

THERMOMETERS—*Indicating Industrial*
Bailey Meter Co.
Barber-Colman Co.
Bristol Co.
Foxboro Co.
General Electric Co.
General Scientific Equipment Co.
Hagan Chemicals & Controls, Inc.
JOHNSON SERVICE CO. ADV. PG. 151
Leeds & Northrup Co.
Minneapolis-Honeywell Regulator Co.
Powers Regulator Co.
Precision Thermometer & Instrument Co.
Pyrometer Instrument Co.
Sarco Co., Inc.
Taylor Instrument Cos.
Weston Instruments, Div. Daystrom, Inc.

THERMOMETERS—*Recording* (See Instruments—Temperature, Indicating & Recording)

THERMOMETERS—*Wet-Bulb* (See Instruments—Wet-Bulb Hygrometer)

TETRAFLUOROETHYLENE YARNS (See Yarns & Fibers)

THERMOSTATS—*Industrial and/or Room*
ALLEN-BRADLEY Co. ADV. PG. 3rd Cover
Barber-Colman Co.
Bristol Co.
General Electric Co.
Hagan Chemicals & Controls, Inc.
Herbert Products, Inc.
JOHNSON SERVICE CO. ADV. PG. 151
Minneapolis-Honeywell Regulator Co.
Powers Regulator Co.
Taylor Instrument Cos.
Westinghouse Electric Corp., General Industries Div.
WIEGAND CO., EDWIN L. ADV. PG. 130

THICKENERS (See Gums or Printing Thickeners)

THINNERS & THINNING AGENTS
American-Marietta Co.
BATSON CO., LOUIS P. ADV. PG. 112
Bryant Chemical Corp.
Du Pont de Nemours & Co., Inc., E. I.
Esso Standard Oil Co.
Metro-Atlantic, Inc.
Minnesota Paints, Inc.
Scher Bros.
Sun Oil Co.
Union Carbide Chemicals Co., Div. Union Carbide Corp.

THREAD BOARDS (See Boards—Thread)

THREAD-POLISHING MACHINES
Collins Bros. Machine Co.
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER, INC. ADV. PG. 145

THREAD COMPRESSORS
MITCHELL-BISSELL CO. ADV. PG. 77

THREAD-PULLING MACHINES
Kastrinsky Machine Co., Inc.

THREAD-WAXING ATTACHMENTS
Collins Bros. Machine Co.

THREAD-WAXING MACHINES (See Thread-Polishing Machines)

THROWING MACHINES (See also Twisters—Yarn, or Up-Twisters)
Fletcher Works, Inc.
Kidde Textile Mach. Corp.
U. S. Textile Machine Co.
Universal Winding Co.

THROWING OILS (See Lubricants—Fiber & Yarn)

THROWSTERS (See Commission Services)

TIERS—*Bundle* (See Tying Machines—Bundle)

TIES—*Bale* (See Strapping—Box & Carton)

TIGERS
BIRCH BROS., INC. ADV. PG. 137
Curtis & Marble Machine Co.
GESSNER CO., DAVID ADV. PG. 135
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Werner Machine Co.

TIMERS
ALLEN-BRADLEY CO. ADV. PG. 3rd Cover
Bristol Co.
Cutler-Hammer, Inc.
General Electric Co.
Minneapolis-Honeywell Regulator Co.
Taylor Instrument Cos.

TIN CRYSTALS (See Tin—Salts of—Chloride)

TIN SALTS (See Tin—Salts of—Chloride)

TIN—*Salts of Chloride*
Du Pont De Nemours & Co., Inc., E. I.
Jordon Co.

TINTING MACHINES
BATSON CO., LOUIS P. ADV. PG. 112
Hunter, Inc., James
P&N Machine Co., Div. Peterson & Neville, Inc.

TINTS—*Fugitive*
Arkansas Co.
Charlotte Chemical Laboratories, Inc.
GENERAL DYESTUFF CO., SALES DIV., GENERAL ANILINE & FILM CORP. ADV. PG. 187
POLYMER SOUTHERN, INC. ADV. PG. 184
U. S. TESTING CO., INC. ADV. PG. 192

TIPPING MACHINES
BIRCH BROS., INC. ADV. PG. 137
Liberty Machine Co., Inc.
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ADV. PGS. 126, 127
Werner Machine Co.
PERKINS & SON, INC., B. F. ADV. PG. 110

TITANIUM
Borium Pigments ..... **A**
Chloride Pigments ..... **B**
Dioxide ..... **C**
Metal ..... **D**
Oxide ..... **E**
Sulfate ..... **F**
Tetrachloride ..... **G**
Babcock & Wilcox Co., Tubular Products Div. ..... D
Columbia-Southern Chemical Corp. ..... G
Crucible Steel Co. of America ..... D
Dow Chemical Co. ..... D, E, G
Du Pont de Nemours & Co., Inc., E. I. ..... B, C, D

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

Glidden Co. ..... A, C, F
National Lead Co. ..... C, D
Republic Steel Corp. ..... D
Stauffer Chemical Co. ..... G

TOLUENE (See Solvents)

TOLUOL
Barrett Div., Allied Chemical Corp.
Esso Standard Oil Co.
Koppers, Co., Inc.
Republic Steel Corp.
Sun Oil Co.
Tennessee Prod. & Chemical Corp.

TOMMY DODDS (See Mangles—Cloth)

TOOL STEEL (See Steel)

TOOLS—*Burling* (See Irons—Burling)

TOOLS—*Loom & Frame Fixers, Maintenance Mechanics*
BATSON CO., LOUIS P. ADV. PG. 112
Beaver Pipe Tools Co.
Black & Decker Mfg. Co.
DRAPER CORP. ADV. PG. 1
Gardner-Denver Co.
GARLAND MFG. CO. ADV. PG. 152
Ridge Tool Co.
Rockwell Mfg. Co.
Schmidt Mfg. Co. of S. C.
Toledo Pipe Threading Machine Co.

TOOLS—*Strapping* (See Strapping—Box & Carton)

TOTE BOXES (See Boxes—Tote)

TOW-TO-TOP MACHINES
TURBO MACHINE CO. ADV. PGS. 138, 139
WARNER & SWASEY CO. ADV. PG. 2nd Cover

TOW-TO-YARN MACHINES
Whitin Machine Works

TRANSFER IRONS
Kaumagraph Co.
TEXTILE MACHINE WORKS ADV. PGS. 140, 141

TRANSFER MACHINES
Kaumagraph Co.
SOUTHERN MILL EQUIPMENT CORP. ADV. PG. 144
SPEIZMAN CO., MORRIS ADV. PG. 144
TEXTILE MACHINE WORKS ADV. PGS. 140, 141

TRANSFERS—*Dry*
Kaumagraph Co.

TRANSFORMERS—*Power & Instrument*
Allis-Chalmers Mfg. Co.
Bristol Co.
General Electric Co.
Square D Co.
Wagner Electric Co.
Westinghouse Electric Corp., General Industries Div.
Weston Instruments, Div. Daystrom, Inc.

TRANSFORMERS—*Speed* (See Motors—Gear)

TRANSMISSIONS—*Variable Speed* (Gear—See Motors—Gear)
Allis-Chalmers Mfg. Co.
Cleveland Worm & Gear Co.
Dodge Mfg. Corp.
Lewellen Mfg. Co.
Link-Belt Co.
Morse Chain Co.
Oilgear Co.
Reeves Pulley Co.
Reliance Electric & Engineering Co.
Sterling Electric Motors, Inc.
Wood's Sons Co., T. B.

TRANSMITTERS—*Loom Power*
[illegible] ADV. PG. 99
DRAPER CORP. ADV. PG. 1
Westinghouse Electric Corp., General Industries Div.

TRAPS
Lifting & Vacuum Service ..... A
Steam or Compressed Air ..... B
JOHNSON CORP. ..... A
ADV. PG. 116
Anderson Co., V. D. ..... B
Armstrong Machine Works ..... B
Clark Mfg. Co.
Crane Co. ..... B
M-B Products Co. ..... B
PERFECTING SERVICE CO. ..... B
ADV. PG. 129
Powers Regulator Co. ..... B
Sarco Co., Inc. ..... B
West Point Foundry & Machine Co. ..... B
Yarnall-Waring Co. ..... B

TRAVELERS
Bar ..... A
Ring ..... B
Carter Traveler Co., Div. A. B. Carter Co., Inc. ..... B
Collins Supply & Equipment Co. ..... A
DARY RING TRAVELER CO. ..... B
ADV. PG. 98
NATIONAL RING TRAVELER CO. ..... B
ADV. PG. 79
U. S. RING TRAVELER CO. ..... B
ADV. PG. 167
VICTOR RING TRAVELER DIV., SACO-LOWELL SHOPS B
ADV. PG. 89

TRICHLORETHYLENE (See Solvents)

TRICOT MACHINES (See Knitting Machines—Tricot)

TRIETHANOLAMINE (See Solvents)

TRIETHYLENE GLYCOL (See Solvents)

TRIMMERS—*Selvage* (See Cutters—Selvage Loop)

TRISODIUM PHOSPHATE (See Sodium—Salts of Phosphates, Tri-basic)

TROLLEYS—*I-Beam* (See Conveyors—Overhead Monorail, or Hoists—Monorail)

TROUGHS (See Cylinders)

TRUCKING SERVICES
Akers Motor Lines
Mason & Dixon Lines, Inc.
McLean Trucking Co.

TRUCKS—*Batch Can* (See Carriers—Batch Can)

TRUCKS—*Beam, Bobbin, Cake Drying, Conditioning, Doffing, Dryer, Dyehouse, etc.*, (See Trucks—Mill)

TRUCKS—*Canvas* (See Baskets—Canvas, or Trucks—Mill)

TRUCKS—*Crane* (See Trucks—Elevating & Stacking)

Be sure to mention
FACT FILE
when writing to these companies

TRUCKS
Electric or Gas ..... A
Elevating & Stacking ..... B
Fork Lift (See Trucks—Elevating & Stacking)
Hand-Lift C
Lap (See Trucks—Mill)
Lift Trucks (See Trucks—Elevating & Stacking, or Hand Lift)
Loom Beam (See Trucks—Mill)
Mill ..... D
Mop (See Floor Cleaning, Sanding, Scrubbing & Polishing Machines)
Pin-Board ..... E
Allis-Chalmers Mfg. Co., Engine-Material Handling Div. A, B
American Pulley Co. ..... A, B, C, D
Ballymore Co. ..... B, D
BATSON CO., LOUIS P. ..... B, C, D, E
ADV. PG. 112
Bennett Rose Co. ..... D, E
Clark Equipment Co. ..... A, B
Daniels, Inc., C. R. ..... D
Elwell-Parker Electric Co. ..... A, B
EXCEL CO., INC. ..... C, D, E
ADV. PG. 165
Fairbanks Co. ..... D
Federal Fibre Co. ..... D
Fiberglass Box Co. ..... D
FISHER MFG. CO. ..... D
ADV. PG. 111
Glasco Equipment Corp. ..... D
Hyster Co. ..... A, B
Jenkins Metal Shops ..... D, E
Lane & Bros., Inc., W. T. ..... D
Liberty Machine Co., Inc. ..... D
Lift Trucks, Inc. ..... A, B
Meese, Inc. ..... D
Morris Textile Equipment Corp. ..... D
Moto-Truc Co. ..... A, B
NATIONAL VULCANIZED FIBRE CO. ..... D
ADV. PG. 156
Nutting Truck & Caster Co. ..... D
Paddock Co., J. C. ..... B, D, E
Pettibone Mulliken Corp. ..... A, B
Raymond Corp. ..... A, B, C
RIGGS & LOMBARD CO. ..... D
ADV. PGS. 122, 123
SPAULDING FIBRE CO. ..... D
ADV. PG. 87
Sterling Engineering Co. ..... D, E
Thomas Truck & Caster Co. ..... D
Towmotor Corp. ..... A, B, C
Yale & Towne Mfg. Co. ..... A, B, C, D

TRUCKS—*Platform* (See Trucks—Gas or Electric, or Hand Lift)

TRUCKS—*Quill-Board, Reel, Roving, Sliver Can* (See Trucks—Mill)

TRUCKS—*Tiering* (See Trucks—Elevating & Stacking)

TRUCKS—*Warp, Yarn Handling* (See Trucks—Mill)

TUBES
Cloth (See Cores)
Fibre & Plastic ..... A
Metal (Yarn) ..... B
Paper C
Perforated ..... D
Redraw, Caps & Chucks ..... E
Wood ..... F
American Hard Rubber Co. ..... A
American Paper Products Co. C
AMERICAN PAPER TUBE CO. ..... A, C
ADV. PG. 108
BATSON CO., LOUIS P. ..... A, D, E, F
ADV. PG. 112
Continental Diamond Fibre Corp. ..... A
ENGINEERED PLASTICS, INC. ..... A, B, E
ADV. PG. 74
Gaston County Dyeing Machine Co. ..... B, D
Larsen Tool & Stamping Co. ..... B, D
League Mfg. Co., G. F. ..... F
LESTERSHIRE SPOOL DIV. ..... A
ADV. PG. 157
Lowell Shuttle Co. ..... F
Matthews Equipment Co. ..... A
McCaskie, Inc., Wm. ..... F
National Vulcanized Fibre Co. ..... A, B, E, F
Royersford Needle Works, Inc. ..... B
TURBO MACHINE CO. ..... B
ADV. PGS. 138, 139
SONOCO PRODUCTS CO. ..... A, C, D
ADV. PG. 54
SPAULDING FIBRE CO. ..... A, E
ADV. PG. 87
Textile Paper Products, Inc. ..... A, C
Venango Engineering Co., Inc. ..... D

TUBING (See Steel)

TUBS—*Dye* (See Tanks—Corrosion-Resisting, or Wood)

TUBS—*Soaking* (See Tanks)

TUFTING MACHINES
Broad St. Machine Co.
COBBLE BROS. MACHINERY CO., INC. ADV. PG. 91
SOUTHERN MACHINE CO. ADV. PG. 162
Super-Tufter Machinery Co., Inc.
Ten-Tex Corp.

TURBINES
Hydraulic ..... A
Steam ..... B
Allis-Chalmers Mfg. Co. ..... A, B
DeLaval Separator Co. ..... B
Smith Co., S. Morgan ..... A
Elliott Co. ..... B
General Electric Co. ..... B
Worthington Corp. ..... A

TURBO COMPRESSORS (See Air Compressors)

TURBO GENERATORS (See Generators—AC & DC)

TURKEY RED OIL (See Oil—Fiber Process)

TURNING & LOADING MACHINES
Firsching & Son, Inc., J. A.
TUBULAR TEXTILE MACHINERY CORP. ADV. PG. 118

TURNINGS—*Wood*
BATSON CO., LOUIS P. ADV. PG. 112
Gibson Textile Specialty Co.
Hardwood Mfg. Co., Inc.
League Mfg. Co., G. F.
McCaskie, Inc., Wm.
Norris Bros.

TWISTERS
Ring (See Twisters—Yarn)
Rope & Cordage ..... A
Yarn (See also Throwing Machines or Up-Twisters) ..... B
Collins Bros. Machine Co. ..... B
Fletcher Works ..... A, B
Haskell-Dawes Machine Co., Inc. ..... A, B
Mackie & Sons Ltd., James ..... B
Meadows Mfg. Co. ..... A, B
Medley Mfg. Co. ..... B
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ..... B
ADV. PG. 63
SACO-LOWELL SHOPS ..... B
ADV. PGS. 68-71
Universal Winding Co. ..... B
U. S. Textile Machine Co. ..... B
WARNER & SWASEY CO. ..... A, B
ADV. PG. 2nd Cover
SANT' ANDREA NOVARA—Rep. by ERNEST L. FRANKL ..... B
ADV. PG. 88
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... B
ADV. PG. 62
Whitin Machine Works ..... A, B

TWIST SETTERS
Burlington Engineering Co., Inc.
INDUSTRIAL DRYER CORP. ADV. PG. 72
Kearny Mfg. Co., Inc.
Lydon Bros.
Miller Corp., Harry
Mona Industries, Inc.
RIGGS & LOMBARD CO. ADV. PGS. 122, 123
Seydel-Woolley & Co.
Wak Industries

TWIST-SETTING AGENTS
Borne Chemical Co., Inc.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Charlotte Chemical Laboratories, Inc.
Colloids, Inc.
EMKAY CHEMICAL CO. ADV. PG. 180
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Miller Corp., Harry
Mona Industries, Inc.
POLYMER SOUTHERN, INC. ADV. PG. 184
Seydel-Woolley & Co.
Stodghill & Co.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.

TYING MACHINES—*Bundle*
Hayssen Mfg. Co.
Signode Steel Strapping Co.

TYING-IN MACHINES—*Warp* (See also Leasing Machines)
Barber-Colman Co.
Kidde Textile Machinery Corp.
Uster Corp.

UNIONS—*Rotary* (See Joints—Revolving)

UNWINDERS—*Cloth*
Black-Clawson Co.
MT. HOPE MACHINERY CO. ADV. PG. 105

UPTWISTERS
Fletcher Works
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
Universal Winding Co.
U. S. Textile Machine Co.
Whitin Machine Works

USED MACHINERY & EQUIPMENT (See Pages 195-200)

V-BELTS (See Belts—V)

VACUUM CLEANING MACHINES (See Cleaners—Portable Industrial Floor Vacuum)

VACUUM NOIL-HANDLING MACHINES (See Collectors—Broken End & Noil, Vacuum)

VALVE SPROCKET RIM
BABBITT STEAM SPECIALTY CO. ADV. PG. 163
Fairbanks Co.
Ohio Injector Co.
Pyrometer Instrument Co.
Saran Lined Pipe Co.

VALVES
Air Check ..... A
Brass & Bronze Gate, Globe Angle Check ..... B
Corrosion-Resisting Gate, Angle Globe & Check C
Diaphragm-Operated ..... D
Expansion ..... E
Float ..... F
Hydraulic ..... G
Iron & Steel Gate, Globe & Check ..... H
Lead-Lined I
Motor-Operated ..... J
Needle ..... K
Pressure-Regulating L
Rubber-Lined ..... M
Safety, Pressure-Relief ..... N
Solenoid ..... O
Stainless Steel ..... P
ALLEN SON'S CO., DIV. O. G. KELLEY & CO. I
ADV. PG. 128
American Hard Rubber Co. ..... C, F, M
American Moistening Co. ..... D
Askania Regulator Co. ..... G
Bailey Meter Co. ..... D, K, L
Barber-Colman Co. ..... B, C, H, J
Bellows Co., The ..... O
Bristol Co. ..... D, I, J, L, O
Cash Co., A. W. ..... D
Clark Controller Co. ..... D
Clark Mfg. Co. L
Cochrane Corp. ..... J, N
Cooper Alloy Corp. ..... C, P
Crane Co. ..... B, C, H, J, K, L, M, N, P
Cutler-Hammer, Inc ..... J
Durion Co., Inc. ..... C, D, P
Electro Chemical Eng. & Mfg. Co. ..... M
Fairbanks Co. ..... A, B, H, K
Farris Engineering Corp. ..... N
Foxboro Co. ..... B, C, D, H, J, K, L, M, P
Gaston County Dyeing Machine Co. ..... C, D, K, O, P
Greenville Steel & Foundry Co. ..... P
Hays Mfg. Co. ..... D, G, O
Hungerford & Terry, Inc. ..... J
Jenkins Bros. ..... I, J, K
JOHNSON CORP. ..... D, O
ADV. PG. 116
JOHNSON SERVICE CO. ..... D, J
ADV. PG. 151
Lehigh Fan & Blower Div., Fuller Co. ..... J
LOGEMANN BROS. CO. ..... G, L, N
ADV. PG. 149
Lunkenheimer Co. ..... A, B, C, G, H, J, K, N
Manning, Maxwell & Moore, Inc. ..... B, H, L, N
Mason-Neilan, Div. of Worthington Corp. ..... D, F, J, L
Minneapolis-Honeywell Regulator Co., Industrial Div. ..... D, L, O
Minneapolis-Honeywell Regulator Co. ..... A, B, C, D, H, J, O, P
National Lead Co. I
Norgren Co., C. A. ..... K, L, N
Ohio Injector Co. ..... A, B, C, G, H, J, M
Oilgear Co. ..... G
Pako Corp. ..... D, P
Pfaudler Co., Div. Pfaudler Permutit, Inc. C
Powell Co., Wm. ..... A, B, C, G, H, I, J, K, N, P
Powers Regulator Co. ..... D, L
Rockwell Mfg. Co. ..... B, C, H, J, K, L, P
Roy Co., Milton ..... C, H, N, P
R-P & C. Valve Div., American Chain & Cable Co., Inc. ..... B, C, H, J, K
Saran Lined Pipe Co. ..... D, J
Sarco Co., Inc. ..... O
Sealol Corp. ..... G
Smith Co., S. Morgan ..... A, D, F, G, J, L, M, P
U. S. Rubber Co., Mechanical Goods Div. ..... M
Venango Engineering Co., Inc. ..... B, P
Walworth Co. ..... B, H, J
West Point Foundry & Machine Co. ..... J, L, N
Yarnall-Waring Co. ..... G

VAT COLORS (See Dyes)

VAT DYES (See Dyes)

VATS—Dye (See Tanks—Corrosion Resisting)

VEGETABLE DYES (See Dyes)

VEGETABLE GUMS (See Gums)

VENDING MACHINES
AUTOMATIC CANTEEN CO. OF AMERICA ADV. PG. 193
Canteen Co.
Canteen Service of Carolina
Canteen of Dixie
Piedmont Canteen Service

VENTILATION EQUIPMENT (See Air Conditioners—Central Type, or Fans—Exhaust & Ventilation)

VINYL CHLORIDE ACETATE YARNS & FIBERS (See Yarns & Fibers)

VINYL STABILIZERS
Harshaw Chemical Co.
Nopco Chemical Co.
Shell Oil Co.
Sherwin Williams Co., Pigment, Color & Chemical Div.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Victor Chemical Works

VISCOMETERS
Bristol Co.
Calgon Co.
General Electric Co.
Norcross Corp.

VITRIOL (See Acids—Sulfuric)

VOLTMETERS (See Ammeters, Voltmeters, Wattmeters)

WARP COMPRESSORS
Allen Warper Co.
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101
DAVIS & FURBER MACHINE CO. ADV. PG. 154
West Point Foundry & Machine Co.

WARP DRAWING-IN MACHINES
Barber-Colman Co.

WARP KNITTING MACHINES (See Knitting Machines—Milanese, Raschel, Tricot)

WARP-SIZING MACHINES (See Slashers)

WARP TYING-IN MACHINES (See Tying-In Machines—Warp)

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

WARP-WRAPPING MACHINES
COCKER MACHINE & FOUNDRY CO. ADV. PGS. 100, 101

WARPERS
Ball and/or Sliver ..... **A**
Beam ..... **B**
Spool ..... **C**

Allen Beam Co. ..... A, B, C
Allen Warper Co. ..... A, B, C
Barber-Colman Co. ..... A, B
Benninger Engineering Co.—Rep. by H. J. Theiler Corp. ..... B
COCKER MACHINE & FOUNDRY CO. ..... A, B, C
ADV. PGS. 100, 101
DAVIS & FURBER MACHINE CO. ..... B
ADV. PG. 154
Kidde Textile Machinery Corp. ..... B, C
REINER, INC. ..... B
ADV. PG. 145
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ..... B
ADV. PG. 62

WASHERS—*Non-Metallic*
Dayton Rubber Co.
ENGINEERED PLASTICS, INC. ADV. PG. 74
FELTERS CO. ADV. PG. 156
NATIONAL VULCANIZED FIBRE CO. ADV. PG. 156
U. S. Rubber Co., Mechanical Goods Div.

WASHING MACHINES
Endless-Blanket ..... **A**
Felt-Goods ..... **B**
Knit-Goods ..... **C**
Lace ..... **D**
Warp ..... **E**
Wool (See Scouring Machines)
Woven Fabric ..... **F**

BIRCH BROS., INC. ..... F
ADV. PG. 137
BUTTERWORTH & SONS CO., H. W. ..... F
ADV. PGS. 114, 115
CAROLINA KNITTING MACHINE CO. C
ADV. PG. 144
Carolina Machinery Co. ..... F
DEWEY & ALMY OVERSEAS CO., DIV. W. R. GRACE & CO. ..... A
ADV. PG. 164
GERBER MASCHINENFABRIK—Rep. by ROBT. REINER, INC. ..... C, D, F
ADV. PG. 145
Greenville Steel & Foundry Co. ..... A, B, C, E, F
HUNT MACHINE CO., RODNEY ..... A, B, C, D, F
ADV. PG. 95
Hunter Machine Co., James ..... C, D, F
McKIERNAN-TERRY CORP., TEXTILE MACHINERY DIV. ..... C, F
ADV. PGS. 126, 127
P&N Machine Co., Div. Peterson & Neville, Inc. ..... A, B, C, F
PROCTOR & SCHWARTZ, INC. ..... C, D, F
ADV. PG. 104
RIGGS & LOMBARD CO. ..... A, B, C, D, F
ADV. PGS. 122, 123
TEXTILE SHOPS ..... C, F
ADV. PGS. 120, 121
Tower Iron Works ..... D, F
Van Vlaanderen Machine Co. ..... C, F
Verdiun Machine Corp. ..... A

WASTE MACHINES
Aldrich Machine Works
CURLATOR CORP. ADV. PG. 65
Kirkman & Dixon Machinery Co.
PLATT BROS. (SALES) LTD.—Rep. by ATKINSON, HASERICK & CO., INC. ADV. PG. 63
PROCTOR & SCHWARTZ, INC. ADV. PG. 104
Whitin Machine Works

WATER HEATERS (See Heaters—Water)

WATERPROOFING AGENTS—*Fabric*
Alco Oil & Chemical Co.
Apex Chemical Co.
Arkansas Co.
Bryant Chemical Corp.
Dow Chemical Co.
Dow Corning Corp.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Esso Standard Oil Co.
Hart Products Corp.
Kali Mfg. Co.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Richmond Oil Soap & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
Sandoz, Inc.
Scholler Bros., Inc.
Standard Chemical Products, Inc.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
U. S. Rubber Co., Mechanical Goods Div.
WOLF & CO., JACQUES ADV. PG. 188

WATER REPELLENTS
American Cyanamid Co., Organic Chemicals Div.
Antara Chemicals, Div. of General Aniline & Film Corp.
Apex Chemical Co.
Arkansas Co.
Armour & Co.
Berkshire Color & Chemical Corp.
Bryant Chemical Corp.
Burkart Schier Chemical Co.
Ciba Co., Inc.
Dow Corning Corp.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
EMKAY CHEMICAL CO. ADV. PG. 180
Esso Standard Oil Co.
General Electric Co., Silicone Products Dept.
Hart Products Corp.
Kali Mfg. Co.
Koppers Co.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Minnesota Mining & Mfg. Co.
Moretex Chemical Products, Inc.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Onyx Oil & Chemical Co.
POLYMER INDUSTRIES ADV. PG. 184
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
Quaker Chemical Products
Refined Products Corp.
Richmond Oil Soap & Chemical Co.
Sandoz, Inc.
Scholler Bros., Inc.
Seydel-Woolley & Co.
Standard Chemical Products, Inc.
Steelcote Mfg. Co.
TEXTILE ADJUNCTS CORP. ADV. PG. 182
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188

WATER TREATMENT
Slime & Waste Control Equipment ..... **A**
Slime & Waste Recovery, Chemical ..... **B**
Water Softening Equipment (See also Purifiers—Water) ..... **C**
Water Softening Agents (See also Chelating Agents and Sequestering Agents) ..... **D**

Allis-Chalmers Mfg. Co. ..... A, B, C, D
American Water Softener Co. ..... A, C, D
Antara Chemicals, Div. of General Aniline & Film Corp. ..... B, D
Arkansas Co. ..... D
Armour & Co. ..... B
Calgon Co. ..... B, C, D
Cochrane Corp. ..... A, C, D
Dow Chemical Co. ..... B, D
Drew Co., E. F., Textile Chemicals Dept. ..... B, D
Du Pont de Nemours & Co., Inc., E. I. ..... B
Gallowhur Chemical Corp. ..... B
GENERAL CHEMICAL DIV., ALLIED CHEMICAL CORP. ..... B, D
ADV. PG. 179
Goodrich Chemical Co., B. F. ..... B
Graver Water Conditioning Co. ..... A, C
Harchem Div., Wallace & Tiernan, Inc. ..... B
Hungerford & Terry, Inc. C
INDUSTRIAL PRODUCTS CO. ..... B, D
ADV. PG. 150
International Salt Co., Inc. C
Kearny Mfg. Co., Inc. ..... D
Link-Belt Co. ..... A
Monsanto Chemical Co., Organic Chemicals Div. ..... D
Morton Salt Co. C
National Aniline Div., Allied Chemical Corp. ..... B
Nopco Chemical Co. ..... D
Oakite Products, Inc. ..... B, D
Olin Mathieson Chemical Corp., Industrial Chemical Div. ..... B, D
Onyx Oil & Chemical Co. ..... B, D
Permutit Co., Div. Pfaudler Permutit, Inc. ..... A, B, C, D
Philadelphia Quartz Co. ..... B
Putnam Chemical Corp. ..... B, C, D
Roy Co., Milton ..... A, B, C
Rumford Chemical Works ..... D
Stauffer Chemical Co. ..... B
TENNESSEE CORP. ..... B, D
ADV. PG. 186
Victor Chemical Works ..... D
Wallace & Tiernan, Inc. ..... A
Wica Chemicals, Inc. ..... B
WYANDOTTE CHEMICALS CORP. ..... D
ADV. PGS. 172, 173

WAXES—*Synthetic*
Bryant Chemical Corp.
Colloids, Inc.
CONCORD CHEMICAL CO. ADV. PG. 176
Dow Chemical Co.
Eastman Chemical Products, Inc.
Glyco Products Co., Inc.
Houghton & Co., E. F.
Nopco Chemical Co.
North, Inc., Frank G.
POLYMER SOUTHERN, INC. ADV. PG. 184
Putnam Chemical Corp.
SEMET-SOLVAY PETROCHEMICAL DIV., ALLIED CHEMICAL CORP. ADV. PG. 183
Seydel-Woolley & Co.
Sonneborn Sons, Inc., L.
Southern Sizing Co.
Union Carbide Chemicals Co., Div. Union Carbide Corp.

WEBBING & BRAID
Daniels, Inc., C. R.
SOUTHERN WEAVING CO. ADV. PG. 168
UNITED ELASTIC CORP. ADV. PG. 112

WEB-FORMING MACHINES (See also Non-Woven Fabric Machines)
CURLATOR CORP. ADV. PG. 65
Lambeth Rope Co.
PROCTOR & SCHWARTZ, INC. ADV. PG. 104

WEFT-STRAIGHTENING MACHINES (See Filling-Straightening Machines)

WEIGHTS
Creel-tension ..... **A**
Let-Off ..... **B**
Spinning Roll ..... **C**

Allen Warper Co.
DRAPER CORP. ..... B
ADV. PG. 1
Kidde Textile Machinery Corp. ..... A
Livermore Corp., H. F. ..... B
Roberts Co. C
SACO-LOWELL SHOPS C
ADV. PGS. 68-71
West Point Foundry & Machine Co. ..... B
Whitin Machine Works C
YOUNG MACHINE CO., F. A. C
ADV. PG. 78

WELDING EQUIPMENT
General Scientific Equipment Co.
Linde Co., Div. Union Carbide Corp.
Westinghouse Electric Corp., General Industries Div.
Worthington Corp.

WHEELS—*Traverse*
ROY & SON, B. S. ADV. PG. 167

WHEELS—*Truck* (See Casters & Wheels—Truck)

WETTING AGENTS
Antara Chemicals, Div. of General Aniline & Film Corp.
American Aniline & Extract Co.
Arkansas Co.
Armour & Co.
Arnold, Hoffman & Co.
Bryant Chemical Corp.
Ciba Co., Inc.
Colgate-Palmolive Co.
Colloids, Inc.
Drew Co., E. F., Textile Chemicals Dept.
Du Pont de Nemours & Co., Inc., E. I.
Hercules Powder Co.
Houghton & Co., E. F.
Kearny Mfg. Co., Inc.
Laurel Soap Mfg. Co.
Metro-Atlantic, Inc.
Miller Corp., Harry

Be sure to mention
FACT FILE
when writing to these companies

Mona Industries, Inc.
Morningstar-Paisley, Inc.
National Aniline Div., Allied Chemical Corp.
Nopco Chemical Co.
Nyanza Color & Chemical Co., Inc.
Olin Mathieson Chemical Corp., Industrial Chemical Div.
Onyx Oil & Chemical Co.
Pioneer Salt Co.
POLYMER SOUTHERN, INC. ADV. PG. 184
Quaker Chemical Products
Refined Products Corp.
ROHM & HAAS CO., INC. ADV. PG. 185
Royce Chemical Co.
Scher Bros.
Scholler Bros., Inc.
Seydel-Woolley & Co.
SIDDALL CO., INC., GEO. F. ADV. PG. 184
Stodghill & Co.
Union Carbide Chemicals Co., Div. Union Carbide Corp.
Ultra Chemical Works
Victor Chemical Works
Wica Chemicals, Inc.
WOLF & CO., JACQUES ADV. PG. 188
WYANDOTTE CHEMICALS CORP. ADV. PGS. 172, 173

WHEAT STARCH (See Starches—Natural)

WHIPROLLS
Allen Beam Co.
Crompton & Knowles Corp.
McCaskie, Inc., Wm.
MILTON MACHINE WORKS ADV. PG. 159

WHITING (See Calcium—Salts of—Carbonate)

WHIZZERS (See Extractors—Centrifugal)

WILLOWS (See Dusting Machines—Wool & Waste)

WINCHES—*Electric*
Stephens-Adamson Mfg. Co.

WINDERS
Ball . . . . . A
Braider Bobbin . . . . . B
Cloth C
Cone . . . . . D
Cop (See Winders—Filling)
Fillet . . . . . F
Filling Bobbin . . . . . G
Knit Goods (See Winders—Cloth)
Lap (See Lappers—Sliver)
Multiple-End . . . . . H
Narrow-Fabric (See Winders—Cloth)
Narrow-Fabric Filling-Bobbin I
Quill (See Filling-Bobbin)
Roll (See Winders—Cloth)
Skein (See also Reels—Skeining) . . . . . J
Thread (See Spoolers—Thread)
Tube . . . . . K

Abbott Machine Co. . . . . D, F, J, K
Allen Beam Co. . . . . A
Allen Warper Co. . . . . A
Ambler Textile Machinery Co. . . . . B, F
BIRCH BROS., INC. C
ADV. PG. 137
Black-Clawson Co. C
BUTTERWORTH & SONS CO., H. W. C
ADV. PGS. 114, 115
Cameron Machine Co. C
Collins Bros. Machine Co. I
Curtis & Marble Machine Co. C
Cutting Room Appliances Corp. C
Fletcher Works . . . . . G, I
FOSTER MACHINE CO. . . . . D, F, G, J, K
ADV. PGS. 66, 67
HOBBS MFG. CO. C
ADV. PG. 161
INDUSTRIAL HEAT ENGINEERING CO. C
ADV. PG. 103
Industrial Ovens C
Kidde Textile Machinery Corp. . . . . B, G, I
Lazenby Co., F. A. . . . . F, G, H
Liberty Machine Co., Inc. . . . . C, J
PERKINS & SON, INC., B. F. C
ADV. PG. 110
RIGGS & LOMBARD CO. C
ADV. PGS. 122, 123
SARGENT'S SONS CORP., C. G. . . . . A
ADV. PG. 84
Schlaforst & Co.—Rep. by Terrell Machine Co. . . . . D
SCHWEITER LTD., Rep. by H. J. THEILER CORP. . . . . D, F, G, I, J
ADV. PG. 80
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. . . . . D, G
ADV. PG. 62
TEXTILE SHOPS C
ADV. PGS. 120, 121
U. S. Textile Machine Co. I
Universal Winding Co. . . . . D, F, G, H, I, J, K
Whitin Machine Works . . . . . F

WIRE—*Steel* (See Steel)

WIRE NAILS—*Steel* (See Steel)

WIRE-STITCHING MACHINES
Acme Steel Co.

WIRES—*Pile*
Baker Mfg. Co.
BATSON CO., LOUIS P. ADV. PG. 112

WIRE-STRAPPING MACHINES (See Strapping Machines—Wire)

WOOL BLENDER (See Blenders—Fiber)

WOOL OILS (See Oil—Fiber Process)

WOOL-SCOURING MACHINES (See Scouring Machines)

WOOL SIZING (See Sizing Agents)

WOOL SPINNING FRAMES (See Spinning Frames—Wool)

WOOL YARNS (See Yarns—Wool)

WORMS—*Take-up*
Crompton & Knowles Corp.
DRAPER CORP. ADV. PG. 1

WORSTED SPINNING FRAMES (See Spinning Frames—Worsted)

WRAPPING MACHINES
Battle Creek Packaging Machines, Inc.
Hayssen Mfg. Co.
Miller Wrapping & Sealing Machine Co.

WRAPPING PAPER (See Paper—Wrapping)

WRENCHES (See Tools)

WRINGERS (See Mangles)

YARN CLEARERS (See Clearers—Flat & Revolving, or Slub Catchers)

YARN CONDITIONERS (See Conditioners—Yarn)

YARN-CURLING MACHINES

YARN-DYEING MACHINES (See Dyeing Machines—Package or Skein)

YARN-MEASURING MACHINES (See Counters—Yarn Yardage, or Hanking Machines or Reels—Skeining)

YARN-SIZING MACHINES
FOSTER MACHINE CO. ADV. PGS. 66, 67
Kali Mfg. Co.
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECHANIQUES—Rep. by ATKINSON, HASERICK & CO. ADV. PG. 62
Tower Iron Works
Universal Winding Co.
West Point Foundry & Machine Co.

YARN-TREATING MACHINES (See Impregnating Machines)

YARNS & FIBERS—*Acrylic*
American Cyanamid Co.
Chemstrand Corp.
DU PONT DE NEMOURS & CO., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57
Tennessee Eastman Co.
Dow Chemical Co.
Union Carbide Chemicals Co.

YARNS & FIBERS—*Cellulose Esters* (Acetate)
Celanese Corp. of America
DU PONT DE NEMOURS & CO., INC., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57
Tennessee Eastman Co.

YARNS—*Cotton*
Aberfoyle Mfg. Co.
American & Efird Mills, Inc.
American Thread Co.
Boger & Crawford
Dixie Mercerizing Co.
Franklin Process Div., Indian Head Mills
Standard-Coosa-Thatcher Co.
Textiles, Inc.
U. S. Rubber Co., Textile Div.

YARNS & FIBERS—*Dinitrile*
Goodrich Chemical Co., B. F.

YARNS & FIBERS—*Inorganic (Glass)*
Ferro Corp., Fiber Glass Div.
L.O.F. Glass Fibers Co.
Owens-Corning Fiberglas Corp.
Pittsburgh Plate Glass Co., Fiber Glass Div.

YARNS—*Man-Made Fiber—Spuns & Blends*
American & Efird Mills, Inc.
American Thread Co.
Dixie Mercerizing Co.
French Worsted Co.
U. S. Rubber Co., Textile Div.

YARNS—*Metallic*
Continental Can Co.
DOBECKMUN CO. ADV. PG. 60
Fairtex Corp.
Malina Co.
Metlon Corp.
Reynolds Metals Co.
Standard Yarn Mills

YARNS & FIBERS—*Polyamide* (Including Nylon)
American Enka Corp.
Chemstrand Corp.
Dawbarn Brothers, Inc.
DU PONT DE NEMOURS & CO., INC., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57
Firestone Plastics Co.
Industrial Rayon Corp.
National Aniline Div., Allied Chemical Corp.
National Plastic Products Co.
Poliafil, Inc.

YARNS & FIBERS—*Polyester*
DU PONT DE NEMOURS & CO., INC., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57
Tennessee Eastman Co.

YARNS & FIBERS—*Polyethylene*
Bolta Products Div., General Tire & Rubber Co.
Dawbarn Brothers Inc.
Firestone Plastics Co.
National Plastic Products Co.
Reeves Brothers, Inc.

YARNS & FIBERS—*Polystyrene*
Dawbarn Brothers, Inc.
Polymers, Inc.

YARNS & FIBERS—*Polyvinylidene Chloride*
Bolta Products Div., General Tire & Rubber Co.
Dawbarn Brothers, Inc.
Firestone Plastics Co.
National Plastic Products Co.
Oriented Plastics, Inc.
Saran Yarns Co.
Southern Lus-trus Corp.

YARNS & FIBERS—*Regenerated Cellulose (Rayon)*
American Bemberg
American Enka Corp.

FOR ADDRESSES OF COMPANIES LISTED SEE PG. 245

AMERICAN VISCOSE CORP. ADV. PG. 58
Celanese Corp. of America
Coosa Pines Div., Beaunit Mills
Courtaulds (Alabama) Inc.
DU PONT DE NEMOURS & CO., INC., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57
Hartford Rayon Co., Div. Bigelow Sanford Carpet Co.
Industrial Rayon Corp.
New Bedford Rayon Div., Mohasco Industries, Inc.
North American Rayon Corp.
Skenandoa Rayon Corp.

YARNS & FIBER—*Tetrafluoroethylene*
DU PONT DE NEMOURS & CO., INC., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57

YARNS—*Textured*
American Bemberg Corp.
American & Efird Mills, Inc.
American Enka Corp.
AMERICAN VISCOSE CORP. ADV. PG. 58
Bancroft & Sons, Joseph
Celanese Corp. of America
Dixie Mercerizing Co.
DU PONT DE NEMOURS & CO., INC., E. I., TEXTILE FIBERS DEPT. ADV. PGS. 56, 57
Eastman Chemical Products, Inc.
Kahn & Feldman
Textured Yarn Co.

Be sure to mention
FACT FILE
when writing to these companies

YARNS & FIBERS—*Vinyl Chloride Acetate*
AMERICAN VISCOSE CORP. ADV. PG. 58
Polymers, Inc.

YARNS—*Wool*
Aldon Spinning Mills Corp.
American & Efird Mills, Inc.
American Thread Co.
Falls Yarn Mills, Inc.
French Worsted Co.

ZINC
Borate . . . . . A
Chloride . . . . . B
Dust C
Formaldehyde Sulfoxylate (Basic) . . . . . D
Formaldehyde Sulfoxylate . . . . . E
Hydrosulfite . . . . . F
Oxide . . . . . G
Phosphate . . . . . H
Silicoflouride I
Sulfate . . . . . J
Sulfite . . . . . K
Antara Chemicals, Div. of General Aniline & Film Corp. . . . . D, E
Arkansas Co. . . . . D
Du Pont de Nemours & Co., Inc., E. I. . . . . B, K
Eagle-Picher Co. . . . . G
Jordon Co. . . . . B
ROHM & HAAS CO., INC. . . . . D, F
ADV. PG. 185
Royce Chemical Co. . . . . E, G
Scher Bros. . . . . D, E, F
Sherwin Williams Co., Pigment, Color & Chemical Div. . . . . G, J
TENNESSEE CORP. . . . . J
ADV. PG. 186
Victor Chemical Works . . . . . H
WOLF & CO., JACQUES . . . . . D, E
ADV. PG. 188

1958-1959 ALPHABETICAL LIST OF SUPPLIERS

The following pages contain an alphabetical listing of companies supplying machinery, equipment, chemicals, dyestuffs, other supplies and services to the textile industry.

The names of companies that are advertisers in this issue are printed in CAPITAL LETTERS and the page numbers of the advertisements of these companies are included to permit quick and easy reference to more information on the products or services concerned.

Abbott Machine Co., Inc., Wilton, N. H.
Aberfoyle Mfg. Co., 123 S. Broad St., Philadelphia, Pa.
Abington Textile Machinery Works, N. Abington, Mass.
Acme Steel Co., 135th St. & Perry Ave., Chicago 27, Ill.
ADAMS, INC., 209 E. Stone Ave., Greenville, S. C. ADV. PG. 76
ADOLF, EMIL, Rep. by Textube Corp., 695 Summer St., Stamford, Conn. and Watson & Desmond, 220 W. 4th St., Charlotte, N. C. ADV. PG. 81
Aerol Co., Inc., 1731 Workmans St., Los Angeles, Calif.
Ainslie Knitting Machine Co., 740 Grand St., Brooklyn 11, N. Y.
Air Maze Corp., 25000 Miles Rd., Cleveland 28, Ohio
Air-Perme-Ator Mfg. Co., 300 Preakness Ave., Paterson 2, N. J.
Air & Refrigeration Corp., 439 Madison Ave., New York 22, N. Y.
Akers Motor Lines, Gastonia, N. C.
Albany Felt Co., Albany 1, N. Y.
Alco Oil & Chemical Co., Trenton Ave. & William Sts., Philadelphia 34, Pa.
Aldon Spinning Mills Corp., Talcottville, Conn.
Aldrich Machine Works, Box 750, Atlanta 1, Ga.
Alemite Div., Stewart-Warner Corp., 1226 Diversey Parkway, Chicago 14, Ill.
Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh, Pa.
Allen Beam Co., 136 River Rd., New Bedford, Mass.
ALLEN SON'S CO., WILLIAM, Div., O. G. Kelley & Co., P.O. Box 175, Shrewsbury, Mass. ADV. PG. 128
Allen Warner Co., Lowell, Mass.
ALLEN-BRADLEY CO., 136 W. Greenfield Ave., Milwaukee 4, Wis. ADV. PG. 3rd Cover
Allied Chemical Corp., Nitrogen Div., 40 Rector St., New York 6, N. Y.
Allis Co., The Louis, 478 E. Stewart St., Milwaukee 1, Wis.
Allis-Chalmers Mfg. Co., 1056 South 70th St., Milwaukee 1, Wis.
Allis-Chalmers Mfg. Co., Engine-Material Handling Division, 11355 70th St., Milwaukee 1, Wis.
Alvey Conveyor Mfg. Co., 9301 Olive St., St. Louis, Mo.
Amalgamated Chemical Corp., Ontario & Rorer Sts., Philadelphia 34, Pa.
Ambler Textile Machinery Co., Bodine & York St., Philadelphia 33, Pa.
American Air Filter Co., Inc., 215 Central Ave., Louisville, 8, Ky.
American Aniline & Extract Co., Venango & F Sts., Philadelphia, Pa.
American Bemberg Corp., 261 Fifth Ave., New York 16, N. Y.
American Chain & Cable Co., Reading, Pa.
American Chain & Cable Co., York, Pa.
American Coolair Corp., 3604 Mayflower Ave., Jacksonville, Fla.
American Crayon Co., Sandusky, Ohio
American Cyanamid Co., Organic Chemicals Div., 30 Rockefeller Plaza, New York 20, N. Y.
American Cyanamid Co., Textile Fibers Div., 30 Rockefeller Plaza, New York 20, N. Y.
American & Efird Mills, Inc., Mount Holly, N. C.
American Enka Corp., 530 Fifth Ave., New York 1, N. Y.
AMERICAN FELT CO., 36 Glenville Rd., Glenville, Conn. ADV. PG. 166
American Floor Machine Co., Toledo 3, Ohio
American Hard Rubber Co., Ace Rd., Butler, N. J.
AMERICAN LAVA CORP., Titania, Div., Manufacturers Rd., Chattanooga, Tenn. ADV. PG. 97
American-Marietta Co., 101 E. Ontario St., Chicago 11, Ill.
American Marsh Pumps, Inc., 60 Capital Ave., Battle Creek, Mich.
American Moistening Co., Cleveland, N. C.
American Monorail Co., 13107 Athens Ave., Cleveland, Ohio
American Numbering Machine Co., Atlantic & Shepherd Ave., Brooklyn 8, N. Y.
American Paper Products Co., 2131 E. Rush St., Philadelphia 34, Pa.
AMERICAN PAPER TUBE CO., Rhode Island Hospital Trust Bldg., Woonsocket, R. I. ADV. PG. 108
American Production Machine Co., 109 35th St., Union City, N. J.
American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29, Pa.
American Safety Table Co., Inc., 224 Fifth Ave., New York, N. Y.
American Sterilizer Co., Erie, Pa.
American Thies Corp., 1013 W. Morehead St., Charlotte 8, N. C.
American Thread Co., 260 W. Broadway, New York 13, N. Y.
AMERICAN VISCOSE CORP., 350 Fifth Ave., New York 1, N. Y. ADV. PG. 58
American Water Softener Co., S. E. Cor. Lehigh Ave. & 4th St., Phila., Pa.
Ames Iron Works, Inc., 25 E. Second St., Oswego, N. Y.
Amplex Div., Chrysler Corp., Box 2718, Detroit 31, Mich.
Analytical Measurements, Inc., 585 Main St., Chatham, N. J.
Anchor Fence Div., Anchor Post Products, Inc., 6500 Eastern Ave., Baltimore 24, Md.
Anderson Co., V. D., 1935 W. 96th St., Cleveland, Ohio
ANDREWS CO., Box 570, Spartanburg, S. C. ADV. PG. 156
ANDREWS & GOODRICH DIV., J. O. Ross Engineering Corp., 444 Madison Ave., New York, N. Y. ADV. PG. 124
Anemostat Corp. of America, 10 E. 39th St., New York 16, N. Y.
Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo.
Ansul Chemical Co., Marinette, Wis.
Antara Chemicals, Div. of General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y.
Apex Chemical Co., 200 S. First St., Elizabeth, N. J.
APPLETON MACHINE CO., Appleton, Wis. ADV. PG. 125
Arabol Mfg. Co., 110 E. 42nd St., New York 17, N. Y.
Archer-Daniels-Midland Co., 700 Investors Bldg., Minneapolis 2, Minn.
Arco Co., 7301 Bessemer Ave., Cleveland 27, Ohio
Arguto Oilless Bearing Co., 149 W. Berkley St., Philadelphia 44, Pa.
Arkansas Co., 185 Foundry St., Newark, N. J.
Armco Steel Corp., 703 Curtis St., Middletown, Ohio
Armour & Co., Aux. Group., 1355 W. 31st St., Chicago 9, Ill.
Armstrong Cork Co., Textile Products Dept., Lancaster, Pa.
Armstrong Machine Works, Three Rivers, Mich.
Arnold, Hoffman & Co., 55 Canal St., Providence, R. I.
Arrow Needle Co., Sub. Textile Machine Works, Box 784, Manchester, N. H.
Ashworth Bros., Inc., Fall River, Mass.
Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.
ATKINSON, HASERICK & CO., Box 509, Framingham, Mass. ADV. PGS. 62, 63
Atlanta Belting Co., 510 Whitehall St., S. W., Atlanta 3, Ga.
Atlanta Brush Co., 320 Tanner St., S. E., Atlanta 12, Ga.
Atlantic Chemical Corp., 153 Prospect St., Passaic, N. J.
Atlantic Refining Co., 260 S. Broad St., Philadelphia 1, Pa.
Atlantic Steel Co., Box 1714, Atlanta 1, Ga.
ATLAS ELECTRIC DEVICES CO., 4114 N. Ravenswood Ave., Chicago 13, Ill. ADV. PG. 64
AURORA PUMP DIV., New York Air Brake Co., 1520 Loucks St., Aurora, Ill. ADV. PG. 166
AUTOMATIC CANTEEN CO. OF AMERICA, Merchandise Mart Plaza, Chicago 54, Ill. ADV. PG. 190

BABBITT STEAM SPECIALTY CO., S. Water, Spring & First Sts., New Bedford, Mass. ADV. PG. 163
Babcock & Wilcox Co., 161 E. 42nd St., New York 16, N. Y.
Babcock & Wilcox Co., Tubular Products Div., Beaver Falls, Pa.
Bagshaw Co., W. H., 62 Pine St., Nashua, N. H.
BAHNSON CO., 1001 S. Marshall St., Winston-Salem, N. C. ADV. PG. 4
Bailey Meter Co., 1061 Ivanhoe Rd., Cleveland, Ohio
Baker Mfg. Co., Box 1195, Greenville, S. C.
Ballymore Co., W. Chester, Pa.
Bancroft & Sons, Joseph, Wilmington, Del.
Bankers Trust Co., 16 Wall St., New York, N. Y.
Barber-Coleman Co., Automatic Controls Div., Rockford, Ill.
Barber-Colman Co., Textile Div., Rockford, Ill.
Barco Mfg. Co., 500 N. Hough, Barrington, Ill.
Barnes Textile Associates, Inc., 10 High St., Boston, Mass.
Barrelled Sunlight Paint Co., Box 1365, Providence, R. I.
Barrett Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.
Barry Controls, Inc., Pleasant St., Watertown 72, Mass.
BASSICK CO., 3045 Fairfield Ave., Bridgeport 5, Conn. ADV. PG. 146
BATSON CO., LOUIS P., Box 772, Greenville, S. C. ADV. PG. 112
Battle Creek Packaging Machines, Inc., 115 12th St., Battle Creek, Mich.
Bausch & Lomb Optical Co., 677 St. Paul St., Rochester, N. Y.
Baxter Co., 224 21st Ave., Paterson, N. J.
Beaty Machine Co., J. T., 809 North Graham St., Charlotte, N. C.
Beaver Pipe Tools Co., Warren, Ohio
Becco Chemical Div., Food Machinery & Chemical Corp., River Rd. & Sawyer St., Buffalo, N. Y.
Beck Machine Corp., 50 Church Rd., King of Prussia, Pa.
Beckman Scientific Instruments Div., 2500 Fullerton Rd., Fullerton, Calif.
Behr-Manning Co., Div. of Norton Co., 459 Howe St., Troy, N. Y.
Bellows Co., The, Akron, Ohio
Bemis Bro. Bag Co., Box 32, St. Louis, Mo.
Benjamin Electric Mfg. Co., Des Plains, Ill.
Bennett Rose Co., Roebuck, S. C.
Berkshire Color & Chemical Corp., Springfield, Mass.
BEST & CO., EDW. H., Box 1752, Boston 5, Mass. ADV. PG. 169
Bijur Lubricating Corp., 151 West Passaic St., Rochelle Park, N. J.
BIRCH BROS., INC., 32 Kent St., Sommerville 43, Mass. ADV. PG. 137
Black-Clawson Co., Fulton, New York
Black & Decker Mfg. Co., 600 E. Pennsylvania Ave., Towson, Md.
Blackmer Pump Co., Inc., 1809 Century Ave., S. W., Grand Rapids, Mich.
Blickman & Co., Inc., 411 Gregory Ave., Weehawken, N. J.
Bolta Products, Div., General Tire & Rubber Co., 70 Garden St., Lawrence, Mass.
Boger & Crawford, K & East Venango Sts., Philadelphia 34, Pa.
Bond Co., Chas., 617 Arch St., Philadelphia 6, Pa.
BOOTH CO., BENJAMIN, Allegheny Ave. & Janey St., Philadelphia 34, Pa. ADV. PG. 75
Booth Felt Co., Inc., 100 Water St., Brooklyn 1, N. Y.
Borden Chemical Co., Div. Borden Co., 350 Madison Ave., New York 17, N. Y.
Borne Chemical Co., Inc., 632 S. Front St., Elizabeth, N. J.
Boston Woven Hose & Rubber Co., Div. American Biltrite Rubber Co., Box 1071, Boston, Mass.
Boulin Instrument Corp., 10 First St., Pelham 1, N. Y.
Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.
Bowen-Hunter Bobbin Co., Inc., E. Corinth, Vermont
Brainard Steel Div., Sharon Steel Corp., Warren, Ohio

Briggs-Shaffner Co., Box 188, Salem Station, Winston-Salem, N. C.
Bristol Co., Box 1790, Waterbury 20, Conn.
Broad St. Machine Co., 2614 Broad St., Chattanooga, Tenn.
Brook Motor Corp., 3553 W. Peterson Ave., Chicago 45, Ill.
Brosites Machine Co., 50 Church St., New York, N. Y.
Browning Mfg. Co., 1935 Browning St., Maysville, Ky.
Bryant Chemical Corp., North Quincy, Mass.
Buckeye Cellulose Corp., 2899 Jackson Ave., Memphis 8, Tenn.
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Buffalo Pumps, Div. Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Bulldog Electric Products Co., 7610 Jos. Campau St., Detroit, Mich.
Bunting Brass & Bronze Co., 715 Spencer St., Toledo 1, Ohio
Burkhart Schier Chemical Co., Textile Mfg. Div., Chattanooga, Tenn.
Burlington Engineering Co., Inc., Box 471, Graham, N. C.
Buschman Co., E. W., Clifton & Spring Grove, Cincinnati 32, Ohio
Bussmann Mfg. Div., McGraw-Edison Co., University & Jefferson St. St. Louis 7, Mo.
BUTTERWORTH & SONS CO., H. W., Bethayres, Pa. ADV. PGS. 114-115

Caesar & Co., H. A., 485 Fifth Ave., New York 17, N. Y.
Caldwell Co., W. E., 2540 Brook St., Louisville, Ky.
Caledonia Dye Works, Emerald & Cornwall Sts., Philadelphia 34, Pa.
Cambridge Wire Cloth Co., 152 Linkwood Rd., Cambridge, Mass.
Cameron Machine Co., Franklin Rd., Dover, N. J.
Canteen Co., 1422 De Kalb Ave., N. E., Atlanta, Ga.
Canteen Co., Box 34, Charlottesville, Va.
Canteen of Dixie, Rte. 55, Grove Rd., Greenville, S. C.
Canteen Service of Carolina, 1510 Cliftwood Pl., Charlotte 3, N. C.
Canton Containers, Inc., 1101 North St., S. E., Canton 7, Ohio
Carbic Color & Chemical Co., Inc., 451 Washington St., New York, N. Y.
Carborundum Co., Niagara Falls, N. Y.
Carpenter Steel Co., Alloy Tube Div., Union, N. J.
CAROLINA KNITTING MACHINE CO., 508 W. 5th St., Charlotte, N. C. ADV. PG. 144
Carolina Loom Reed Co., Box 1536, Greensboro, N. C.
Carolina Machinery Co., Box 1922, Charlotte, N. C.
Carrier Corp., Carrier Parkway, Syracuse 1, N. Y.
CARROLL & CO., J. E., 100 Cambridge St., Lowell, Mass. ADV. PG. 102
Carter Traveler Co., Div. A. B. Carter Co., Inc., Box 237, Gastonia, N. C.
Cash Co., A. W., Box 551, Decatur, Ill.
Catalin Corp. of America, 1 Park Ave., New York, N. Y.
Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.
Celanese Corp. of America, Chemical Div., 180 Madison Ave., New York 16, N. Y.
CENTRIF-AIR MACHINE CO., Box 2453 Station D, Atlanta 18, Ga. ADV. PG. 160
Century Electric Co., 1806 Pine St., St. Louis, Mo.
Chain Belt Co., 4701 W. Greenfield Ave., Milwaukee, Wis.
Chainveyor Corp., 5618 E. Washington Blvd., Los Angeles, Calif.
Chandler Machine Co., Ayer, Mass.
Charlotte Chemical Laboratories, Inc., 1120 So. Blvd., Charlotte, N. C.
Chelsea Fan & Blower Co., 639 South St., Plainfield, N. J.
Chiksan Co., Brea, Calif.
Chisholm-Moore Hoist Div., Columbus McKinnon Chain Corp., 6071 Fremont Ave., Tonawanda, N. Y.
Ciba Co., Inc., 627 Greenwich St., New York 14, N. Y.
Clarage Fan Co., 619 Porter St., Kalamazoo, Mich.
Clark Controller Co., 1146 E. 152nd St., Cleveland 10, Ohio
Clark-Cutler-McDermott Co., Franklin, Mass.
Clark Equipment Co., Battle Creek, Mich.
Clark Mfg. Co., 1830 E. 36th St., Cleveland 14, Ohio
Cleaver-Brooks Co., 326 Keefe Ave., Milwaukee, Wis.
Clentimack Co., Geo. E., 229 West St., N. Attleboro, Mass.
Cleveland Crane & Engineering Co., Wickliffe, Ohio
Cleveland Worm & Gear Co., 3300 East 80th St., Cleveland 4, Ohio
Clinton Corn Processing Co., Clinton, Iowa
Clinton Dye Works
Clipper Belt Lacer Co., 974 Front Ave., N. W., Grand Rapids, Mich.
Cloverleaf Freeland Corp., Pine & Green Sts., Hazleton, Pa.
COBBLE BROS. MACHINERY CO., INC., Riverside Drive, Chattanooga 8, Tenn. ADV. PG. 91
Cochrane Corp., 3116 N. 17th St., Philadelphia, Pa.
COCKER MACHINE & FOUNDRY CO., Box 431, Gastonia, N. C. ADV. PGS. 100, 101
Cole Engineering Corp., Box 153, Columbus, Ga.
Cole Mfg. Co., R. D., Newnan, Ga.
Coleman Co., Inc., Box 3597, Greenville, S. C.
Colgate-Palmolive Co., 300 Park Ave., New York 22, N. Y.
Collins Bros. Machine Co., 647 Roosevelt Ave., Pawtucket, R. I.
Collins Supply & Equipment Co., Monsey Ave., Scranton, Pa.
Colloids, Inc., 394-8 Frelinghuysen Ave., Newark 12, N. J.
Colonial Rubber Co., 1100 Oakwood St., Ravenna, Ohio
Colton Chemical Co., 1545 E. 18th St., Cleveland, Ohio
Columbia-Southern Chemical Corp., 632 Ft. Duquesne Blvd., Pittsburgh 22, Pa.
Commercial Factors Corp., One Park Ave., New York, N. Y.
CONCORD CHEMICAL CO., 205 S. Second St., Camden 2, N. J. ADV. PG. 176
Consolidated Baling Machine Co., 404 Third Ave., Brooklyn 6, N. Y.
Continental Can Co., Inc., 100 E. 42nd St., New York 17, N. Y.
Continental Can Co., Yarn Div. 100 East 42nd St., New York 17, N. Y.
Continental Diamond Fibre Corp., Newark 44, Del.
Continental Gin Co., Industrial Div., Birmingham, Ala.
Continental Steel Co., Kokomo, Ind.
Convoy, Inc., 3424 Navarre Rd., S. W., Canton, Ohio
Cooper Alloy Corp., Hillside, N. J.
Coosa Pines Div., Beaunit Mills, 261 Fifth Ave., New York 16, N. Y.
Corn Products Sales Co., 17 Battery Place, New York 4, N. Y.
Corning Glass Works, Corning, N. Y.
Cotton-McCauley & Co., Inc., Box 501, Pawtucket, R. I.
Courtaulds (Alabama) Inc., 600 Fifth Ave., New York 20, N. Y.
Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.
Crane Mfg. Co., Lakeport, N. H.
Crawford Co., Inc., H. E., Kernersville, N. C.
Crawford Mfg. Co., Inc., 10 Dennis St., New Brunswick, N. J.
Crompton & Knowles Corp., 93 Grand St., Worcester, Mass.
Crompton-Richmond Co., Inc., 1071 Ave. of Americas, New York, N. Y.
Crown Engineering & Sales Co., 421 Hill St., Harrison, N. J.
Crucible Steel Co. of America, Box 2518, Pittsburgh 30, Pa.
CURLATOR CORP., 501 W. Commercial St., E. Rochester, N. Y. ADV. PG. 65
Curtis & Marble Machine Co., 72 Cambridge St., Worcester, Mass.
CUSTOM SCIENTIFIC INSTRUMENT, INC., 541 Devon St., Kearny, N. J. ADV. PG. 98
Cutler-Hammer, Inc., 562 N. 12th St., Milwaukee 1, Wis.
Cutting Room Appliances Corp., 1134 Broadway, New York 10, N. Y.
CYCLONE FENCE DEPT., U. S. STEEL CORP., Waukegan, Ill. ADV. PG. 153
Cyclotherm Div., National U. S. Radiator Corp., Oswego, N. Y.

DALTON SHEET METAL CO., S. McCamy St., Dalton, Ga. ADV. PG. 128
Daniels, Inc., C. R., Daniels, Md.
Darnell Corp., 12000 Woodruff Ave., Downey, Calif.
DARY RING TRAVELER CO., Taunton, Mass. ADV. PG. 98
DAVIS & FURBER MACHINE CO., North Andover, Mass. ADV. PG. 154
Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12, Ill.
Dawbarn Bros., Inc., Waynesboro, Va.
Dayton Rubber Co., 2342 Riverview Ave., Dayton 7, Ohio
Delany & Co., Inc., Milnor & Cottman Sts., Tacony, Philadelphia 35, Pa.
DeLaval Separator Co., Astra Textile Div., Poughkeepsie, N. Y.
The Deming Co., Salem, Ohio
Denman Textile Rubber Co., 2828 Second St., Cuyahoga Falls, Ohio
The Denominator Co., Inc., 261 Broadway, New York 7, N. Y.
DEWEY & ALMY OVERSEAS CO., Div. W. R. Grace & Co., 62 Whittemore Ave., Cambridge, Mass. ADV. PG. 164
Dexter Chemical Corp., 819 Edgewater Rd., New York 59, N. Y.
Diamond Chain & Mfg. Co., 483 Kentucky Ave., Indianapolis 7, Ind.
DIEHL MFG. CO., 1189 Finderne Ave., Somerville, N. J. ADV. PG. 99
Dietert Co., 9330 Roselawn Ave., Detroit 4, Mich.
Dings Magnetic Separator Co., 4700 West Electric Ave., Milwaukee 46, Wis.
Dinsmore Mfg. Co., Box 267, Salem, Mass.
Dixie Bearings, Inc., 276 Memorial Drive, S. W., Atlanta, Ga.
Dixie Mercerizing Co., Chattanooga 1, Tenn.
Dixie Spindle & Flyer Co., 1906 North Brevard St., Charlotte 2, N. C.
Dixon Corp., Bristol, R. I.
Dixon Crucible Co., Joseph, 1706 Hayes Ave., Sandusky, Ohio
DOBECKMUN CO., 3301 Monroe Ave., Cleveland 13, Ohio ADV. PG. 60
Dodge Mfg. Co., 3500 Union St., Mishawaka, Ind.
Dodge & Olcott, Inc., 180 Varick St., New York 14, N. Y.
Doerr Electric Co., 616 N. 4th St., Cedarsburg, Wis.
DOLGE CO., C. B., Ferry Lane, Westport, Conn. ADV. PG. 184
Dommerich & Co., L. F., 271 Madison Ave., New York, N. Y.
Dow Chemical Co., Midland, Mich.
Dow Chemical Co., Textile Fibers Div., Warwick, Va.
Dow Corning Corp., Midland, Mich.
Doyle Co., J. E., 1220 W. 6th St., Cleveland 13, Ohio
DRAPER CORP., Hopedale, Mass. ADV. PG. 1
Drew Co., E. F., Textile Chemicals Dept., 15 E. 26th St., New York 10, N. Y.
Dronsfield Bros. Ltd., Oldham, England
Duesberg-Bosson of America, Inc., Jefferson, Mass.
Du Pont de Nemours & Co., E. I., Wilmington 98, Del.
DU PONT DE NEMOURS & CO., INC., E. I., ELECTRO-CHEMICALS DEPT., Wilmington 98, Del. ADV. PG. 181
DU PONT DE NEMOURS & CO., E. I., FILM DEPT., Wilmington 98, Del. ADV. PG. 59
DU PONT DE NEMOURS & CO., E. I., TEXTILE FIBERS DEPT., Wilmington 98, Del. ADV. PGS. 56, 57
Duraloy Co., Scottsdale, Pa.
Durant Mfg. Co., 1934 N. Buffum St., Milwaukee 1, Wis.
Durion Co., Inc., Dept. T-W, 450 N. Findlay St., Dayton, Ohio
Duro-Test Corp., 2321 Hudson Blvd., N. Bergen, N. J.

EAGLE MFG. CO., Wellsburg, W. Va. ADV. PG. 148
Eagle-Picher Co., American Bldg., Cincinnati 1, Ohio
Eastern Stainless Steel Corp., Baltimore, Md.
Eastman Chemical Products, Inc., Kingsport, Tenn.
Eastman Machine Co., 779 Washington St., Buffalo 3, N. Y.
Eaton Mfg. Co., 3307 14th Ave., Kenosha, Wis.
ECLIPSE MACHINE DIV., Bendix Aviation Corp., Elmira, N. Y. ADV. PG. 96
ECONOMY BALER CO., 1254 N. Main St., Ann Arbor, Mich. ADV. PG. 162
Edda International Corp., 468 Fourth Ave., New York 16, N. Y.
Edroy Products Co., Dept. W, 480 Lexington Ave., New York 17, N. Y.
Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa.
Elliott Co., Jeannette, Pa.
Elwell-Parker Electric Co., 4274 St. Clair Ave., Cleveland 3, Ohio
Electra Motors, Inc., 1110 N. Lemon St., Anaheim, Calif.
Electro Chemical Eng. & Mfg. Co., 750 Broad St., Emmaus, Pa.
Emerson Apparatus Co., 177 Tremont St., Melrose, Mass.
Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio
EMKAY CHEMICAL CO., 319 Second St., Elizabeth, N. J. ADV. PG. 180
ENGINEERED PLASTICS, INC., Gibsonville, N. C. ADV. PG. 74
Erie City Iron Works, 1422 East Ave., Erie, Pa.
Eriez Mfg. Co., 1425 Grove Drive, Erie, Pa.
Esso Standard Oil Co., 15 W. 51st St., New York 19, N. Y.
Exact Weight Scale Co., 922 W. 5th Ave., Columbus 8, Ohio
EXCEL CO., INC., Lee Ave., Lincolnton, N. C. ADV. PG. 165
Extremultus, Inc., 405 Lexington Ave., New York 17, N. Y.

Fafnir Bearing Co., New Britain, Conn.
Fabric Development Tests, Box 45, Brooklyn 32, N. Y.
Fairbanks Co., 393 Lafayette St., New York 13, N. Y.
Fairgate Rule Co., Cold Springs-on-Hudson, N. Y.
Fairtex Corp., 1808 Liberty Life Bldg., Charlotte 2, N. C.
Falls Yarn Mills, Woonsocket, R. I.
Farris Engineering Corp., 404 Commercial Ave., Palisades Park, N. J.
FAULTLESS CASTER CO., 1521 N. Garvin St., Evansville 7, Ind. ADV. PG. 106
Fawcett-Finney Ltd., Berkley St., Birmingham, England
Federal Bearings Co., Inc., Poughkeepsie, N. Y.
Federal Fibre Co., 3704 Tenth St., Long Island City 1, N. Y.
Felters Co., 210 South St., Boston 11, Mass.
Felton & Son Co., S. A., 315 Wilson St., Manchester, N. H.
Fenton Label Co., 506 Race St., Philadelphia 6, Pa.
FERGUSON GEAR CO., Gastonia, N. C. ADV. PG. 163
Ferro Corp., 200 Woodycrest Ave., Nashville 11, Tenn.
Fiberglass Box Co., Box 31, Ashtabula, Ohio
Fidelity Machine Co., 3908 Frankford Ave., Philadelphia 24, Pa.
Fife Mfg. Co., Box 878, Oklahoma City, Okla.
FINNELL SYSTEM, INC., 1909 East St., Elkhart, Ind. ADV. PG. 136
Firestone Plastics Co., 307 Fifth Ave., New York 16, N. Y.
Firsching & Son, Inc. J. A., 421 Broad St., Utica, N. Y.
First National Bank of Boston, Boston, Mass.
FISHER MFG. CO., Hartwell, Ga. ADV. PG. 111
Fletcher Works, 2nd & Glenwood Ave., Philadelphia 40, Pa.
FOSTER MACHINE CO., Westfield, Mass. ADV. PGS. 66-67
Foster Wheeler Corp., 666 Fifth Ave., New York 19, N. Y.
Fostoria Pressed Steel Corp., N. Main St., Fostoria, Ohio
Foxboro Co., Foxboro, Mass.
FRANKL ASSOCIATES, ERNEST L., 515 Madison Ave., New York 22, N. Y. ADV. PG. 88
Franklin Process, Div. Indian Head Mills, 1407 Broadway, New York, N. Y.
French Worsted Co., Woonsocket, R. I.
Friez Instrument Div., Bendix Aviation Corp., 1494 Taylor Ave., Baltimore 4, Md.
Frigidaire Div., General Motors Corp., 300 Worth Taylor St., Dayton 1, Ohio
Fyr-Fyter Co., 221 Crane Ave., Dayton 1, Ohio

LIST OF SUPPLIERS

Gallowhur Chemical Corp., North Water St., Ossining, N. Y.
Gardner-Denver Co., Quincy, Ill.
GARLAND MFG. CO., Saco, Me. ADV. PG. 152
Gaston County Dyeing Machine Co., Stanley, N. C.
GASTONIA ROLLER, FLYER & SPINDLE CO., 1212 East Industrial Ave., Gastonia, N. C. ADV. PG. 157
Gastonia Textile Sheet Metal Works, Inc., Gastonia, N. C.
Gates Rubber Co., 999 S. Broadway, Denver 17, Col.
Gaylord Container Corp., Div. Crown Zellerbach Corp., 111 N. 4th St., St. Louis 2, Mo.
Geigy Chemical Corp., Saw Mill River Rd., Ardsley, N. Y.
GENERAL CHEMICAL DIV., Allied Chemical Corp., 42 Rector St., New York, N. Y. ADV. PG. 179
GENERAL DYESTUFF CO., Sales Div., General Aniline & Film Corp., 435 Hudson St., New York 14, N. Y. ADV. PG. 187
General Electric Co., Schenectady 5, N. Y.
General Electric Co., Large Lamp Dept., Nela Park, Cleveland, Ohio
General Electric Co., Silicone Products Dept., Mechanicville Rd., Waterford, N. Y.
General Floorcraft, Inc., 421 Hudson St., New York, N. Y.
General Latex & Chemical Corp., 666 Main St., Cambridge, Mass.
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
General Scientific Equipment Co., 7516 Limekiln Pike, Philadelphia 50, Pa.
GESSNER CO., DAVID, 41 Fremont Ave., Worcester 3, Mass. ADV. PG. 135
Gibson Textile Specialty Co., Box 151, Decatur, Ga.
Ginsberg Machine Co., Inc., 224 Fifth Ave., New York 1, N. Y.
Gladwin Plastics, Inc., 165 Courtland St., N. E., Atlanta 3, Ga.
Glasco Equipment Corp., 2 Wait St., Paterson 4, N. J.
Glidden Co., 900 Union Commerce Bldg., Cleveland 14, Ohio
Globe Dye Works, 4500 Worth St., Philadelphia, Pa.
Globe Woven Belting Co., 1400 Clinton St., Buffalo, N. Y.
Glyco Products Co., Inc., Empire State Bldg., New York 1, N. Y.
Goodrich Chemical Co., B. F., 3135 Euclid Ave., Cleveland 15, Ohio
Goodrich Chemical Co., Textile Fibers Div. 3135 Euclid Ave., Cleveland 15, Ohio
Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, Ohio
Gossett Machine Works, Inc., Gastonia, N. C.
Goulds Pumps, inc., 300 Falls St., Seneca Falls, N. Y.
Graphite Metallizing Corp., 1092 Nepperhan Ave., Yonkers, N. Y.
GRATON & KNIGHT CO., 356 Franklin St., Worcester 4, Mass. ADV. PG. 158
Greensboro Loom Reed Co., Inc., Greensboro, N. C.
Greenville Steel & Foundry Co., Greenville, S. C.
Graver Water Conditioning Co., 216 W. 14th St., New York 11, N. Y.
Griffin & Sons, Ira L., Box 10474, Charlotte, N. C.
Guardian Chemical Co., Box 1354, Atlanta 1, Ga.
Guider Roll & Service Co., Box 3737 Peninsula Station, Daytona Beach, Fla.
GUIDER SPECIALTY CO., 425 West Rock Ave., New Haven 15, Conn. ADV. PG. 102
Gulf Oil Co., Box 1166, Pittsburgh 30, Pa.
Gurley, Y. & L. E., 514 Fulton St., Troy, N. Y.
Gwilliam Co., 360 Furman St., Brooklyn 1, N. Y.

Haertel Co., Walter, 2840 4th Ave., S., Minneapolis 8, Minn.
Hagan Chemicals & Controls, Inc., Hagan Bldg., Pittsburgh, Pa.
Halton's Sons, Thomas, C & Clearfield Sts., Philadelphia 34, Pa.
Hansen Mfg. Co., 4031 W. 150th St., Cleveland 35, Ohio
Hardwood Mfg. Co., Inc., Box 929, Greenville, S. C.
Harchem Div., Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.
Harshaw Chemical Co., 1945 East 97th St., Cleveland, Ohio
Hart Products Corp., 1440 Broadway, New York 18, N. Y.
Hartford Rayon Co., Div. Bigelow Sanford Carpet Co., 136 Madison Ave., New York 16, N. Y.
Hartzell Propeller Fan Co., Div., Castle Hill Corp., Box 909, Piqua, Ohio
HARWOOD & SON, GEO. S., 50 Lagrange St., Worcester 8, Mass. ADV. PG. 168
Haskell-Dawes Machine Co., Inc., 2231 E. Ontario St., Philadelphia 34, Pa.
HAY CO., INC., JAMES E., 244 Smith St., Lowell, Mass. ADV. PG. 163
Hayes Industries, Inc., Jackson, Mich.
Hays Mfg. Co., 12th & Poplar Sts., Erie, Pa.
Hayssen Mfg. Co., 1305 St. Clair Ave., Sheboygan, Wis.
Heany Industrial Ceramics Corp., 915 Whitney Ave., New Haven, Conn.
Helicoid Gage Div., American Chain & Cable Co., Bridgeport, Conn.
Heller, Walter E., 105 W. Adams St., Chicago 90, Ill.
Herbert Products, Inc., 74-32 Jamaica Ave., Woodhaven 21, N. Y.
Hercules Filter Corp., 175 Ethel Ave., Hawthorne, N. J.
Hercules Powder Co., 900 Market St., Wilmington 99, Del.
Hermas Div., Curtis & Marble Machine Co., 72 Cambridge St., Worcester, Mass.
HILL MACHINE CO., 181 E. 7th St., Paterson, N. J. ADV. PG. 193
Hillyard Chemical Co., Box 909, St. Joseph, Mo.
Hilton-Davis Chemical Co., Div. Sterling Drug Co., 2235 Langdon Farm Rd., Cincinnati 13, Ohio
Hinde & Dauch Paper Co., 407 Decatur St., Sandusky, Ohio
HOBBS MFG. CO., 60 C Salisbury St., Worcester 5, Mass. ADV. PG. 161
Hoffner Rayon Co., Belgrade & Ontario Sts., Philadelphia, Pa.
Holdsworth Mfg. Co., Inc., 55 Sabin St., Pawtucket, R. I.
Homer Mfg. Div., Ohio Electric Mfg. Co., 142 E. Pearl Ave., Lima, Ohio
Hooker Electrochemical Co., Chemicals Div., 11 Iroquois St., Niagara Falls, N. Y.
Hooker Electrochemical Co., Plastics Div., 62 Walck Rd., N. Tonawanda, N. Y.
Horn Co., Inc., 10th St. & 44th Ave., Long Island City 1, N. Y.
Houghton & Co., E. F., 303 West Lehigh Ave., Philadelphia, Pa.
HOWARD BROS., 44 Vine St., Worcester, Mass. ADV. PG. 73
Hungerford & Terry, Inc., Clayton, N. J.
HUBINGER CO., State Central Bank Bldg., Keokuk, Iowa ADV. PG. 176
HUNT MACHINE CO., RODNEY, 72 Mill St., Orange, N. J. ADV. PG. 95
Hunter, Inc., James, 745 Lowndes Rd., Greenville, S. C.
Hunter Machine Co., James, North Adams, Mass.
Hyatt Bearings Div., General Motors Corp., Harrison, N. J.
Hyster Co., 2922 Clackamas St., Portland 8, Ore.

I.T.E. Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia, Pa.
IDEAL INDUSTRIES, INC., Bessemer City, N. C. ADV. PG. 90
IDEAL MACHINE SHOPS, INC., Bessemer City, N. C. ADV. PG. 86
Industrial Brush Co., 24 Woodside Ave., Little Falls, N. J.
INDUSTRIAL COATINGS, INC., Box 1567, Greenville, S. C. ADV. PG. 167
INDUSTRIAL DRYER CORP., 432 Fairfield Ave., Stamford, Conn. ADV. PG. 72
INDUSTRIAL HEAT ENGINEERING CO., 121 Cleveland St., Greenville, S. C. ADV. PG. 103
Industrial Instrument Co., 89 Commerce Rd., Cedar Grove, N. J.
Industrial Ovens, 13825 Triskett Rd., Cleveland 11, Ohio
INDUSTRIAL PRODUCTS CO., 185 Harris St., N. E., Atlanta, Ga. ADV. PG. 150
Industrial Rayon Corp., 500 Fifth Ave., New York 36, N. Y.
INDUSTRIAL SAPPHIRE CO., Box 422, Quakertown, Pa. ADV. PG. 159
Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.
Instron Engineering Corp., 2500 Washington St., Canton, Mass.
Interchemical Corp., Color & Chemicals Div., 150 Wagaraw Rd., Hawthorne, N. J.
Intercontinental Dynamics Corp., 170 Coolidge Ave., Englewood, N. J.
International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.
International Engineering, Inc., 1145 Bolander Ave., Dayton 1, Ohio
International Nickel Co., Inc., 67 Wall St., New York, N. Y.
International Salt Co., Inc., Scranton, Pa.
INTERTEX CORP., 270 Madison Ave., New York 16, N. Y. ADV. PG. 194
Iselin & Co., Wm., 357 Fourth Ave., New York, N. Y.
Iselin-Jefferson Financial Co., 325 Broadway, New York, N. Y.
IVES CO., LOYAL T., 19 Water St., New Brunswick, N. J. ADV. PG. 142

JACOBS, E. H., SOUTHERN DIV., Bullard Clark Co., Charlotte, N. C. ADV. PG. 155
JACOBS, E. H., NORTHERN DIV. Bullard Clark Co., Danielson, Conn. ADV. PG. 155
JARRELL-BULLARD CO., Box 2154, Charlotte, N. C. ADV. PG. 162
Jenkins Bros., 100 Park Ave., New York 17, N. Y.
JENKINS SONS, M. W., 444-H Pompton Ave., Cedar Grove, N. J. ADV. PG. 154
Jenkins Metal Shops, Box 1160, Gastonia, N. C.
JIFFY TEXTILE MARKER CO., 406 W. School Lane, Philadelphia 44, Pa. ADV. PG. 164
Johns-Manville Corp., 22 E. 40th St., New York 16, N. Y.
Johnson & Bassett, Inc., 114 Foster St., Worcester, Mass.
Johnson Bronze Co., New Castle, Pa.
JOHNSON CORP., 814 Wood St., Three Rivers, Mich. ADV. PG. 116
JOHNSON SERVICE CO., 507 E. Michigan St., Milwaukee, Wis. ADV. PG. 151
Jones Motrola, 102 Noble St., Stamford, Conn.
Jordon Co., 51st & Merrimac Ave., Chicago, Ill.

Kahn & Feldman, Inc., 200 Madison Ave., New York 16, N. Y.
Kali Mfg. Co., 427 Moyer St., Philadelphia 25, Pa.
Kastrinsky Machine Co., Inc., 651 Utica Ave., Brooklyn 3, N. Y.
Kaumagraph Co., 14th & Poplar Sts., Wilmington 99, Del.
Kearny Mfg. Co., Inc., 681 Schuyler Ave., Kearny, N. J.
Keaskey & Mattison Co., Butler Ave., Ambler, Pa.
Keeler Co., E., 238 West St., Williamsport, Pa.
Keever Starch Co., 5387 E. Town St., Columbus, Ohio
Kelco Co., 120 Broadway, New York 5, N. Y.
Kemp Mfg. Co., C. M., 405 E. Oliver St., Baltimore, Md.
Kennedy Carliner & Bag Co., Inc., Shelbyville, Ind.
Kent Co., 361 Canal St., Rome, N. Y.
Kenyon of Kenyon, R. I., Kenyon, R. I.
Kenyon & Sons, Inc., Paterson & 2nd Sts., Perth Amboy, N. J.
Kenyon & Sons, Inc., D. R., Raritan, N. J.
Kidde Textile Machinery Corp., 35 Farrand St., Bloomfield, N. J.
Kirkman & Dixon Machinery Co., Greenwood, S. C.
KLAUDER WELDON GILES MACHINE CO., Frankfurt, Philadelphia 24, Pa. ADV. PG. 113
Kluttz Machine & Foundry Co., Gastonia, N. C.
Knitting Machine & Supply Co., 250 W. Broadway, New York 13, N. Y.
Koppers Co., Inc., Chemical & Dyestuffs Div., Pittsburgh 19, Pa.
Korfund Co., 48-15 32nd Place, Long Island City, N. Y.
Kuljian Corp., 1200 N. Broad St., Philadelphia 21, Pa.

Laconia Cooper Sales Corp., Laconia, N. H.
Lamb Knitting Machine Co., 8 Montgomery St., Chicopee Falls, Mass.
Lambertville Ceramic & Mfg. Co., Lambertville, N. J.
Lambeth Rope Co., 627 Tarklin Hill Rd., New Bedford, Mass.
Lane & Bros., Inc., W. T., Poughkeepsie, N. Y.
LANLY CO., 2800 Euclid Ave., Cleveland, Ohio ADV. PG. 108
Larsen Tool & Stamping Co., Attleboro, Mass.
Lathem Time Recorder Co., 80 Third St., N. W., Atlanta 7, Ga.
Laurel Soap Mfg. Co., Tioga, Thompson & Almond Sts., Philadelphia 34, Pa.
Lazenby Co., F. A., 3106 Elm Ave., Baltimore 11, Md.
League Mfg. Co., G. F., Box 125, Greenville, S. C.
Leeds & Northrup Co., 7970 Stenton Ave., Philadelphia 44, Pa.
Lehigh Fan & Blower Div., Fuller Co., Fuller Bldg., Catasauqua, Pa.
Leighton Machine Co., Box 418, Manchester, N. H.
Lenkotex Co., 136 Liberty St., New York, N. Y.
LESTERSHIRE SPOOL DIV., NATIONAL VULCANIZED FIBRE CO., Wilmington 99, Del. ADV. PG. 157
Lewellen Mfg. Co., Columbus, Ind.
LEWIS CO., G. B., 456 Montgomer St., Watertown, Wis. ADV. PG. 168
Link-Belt Co., Dept. TWFF-58, Prudential Plaza, Chicago 1, Ill.
Liberty Machine Co., Inc., 275 Fourth Ave., Paterson, N. J.
Lincoln Engineering Co., Div. McNeil Machine & Engr. Co., 5701 Natural Bridge Ave., St. Louis 20, Mo.
Lindly & Co., Inc., 248 Herricks Rd., Mineola, N. Y.
Lift Trucks, Inc., 2423 Spring Grove Ave., Cincinnati 14, Ohio
Linde Co., Div. Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.
Liquidometer Corp., Skillman Ave. at 36th St., Long Island City 1, N. Y.
Livermore Corp., H. F., 20 Linden St., Allston 34, Mass.
Liversey Ltd., Henry, Blackburn, England
LIVINGSTON & HAVEN, INC., Box 808, Charleston, S. C. ADV. PG. 94
L.O.F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, Ohio
Lockwood Greene Engineers, Inc., 41 E. 42nd St., New York 20, N. Y.
L.O.F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, Ohio
Logan Co., 201 Cable St., Louisville 6, Ky.
LOGEMANN BROS. CO., 3100 W. Burleigh St., Milwaukee, Wis. ADV. PG. 149
Loper Co., Ralph E., Wade Hampton Blvd., Greenville, S. C.
Lord Mfg. Co., 1635 W. 12th St., Erie 6, Pa.
Louden Machinery Co., 607 Broadway, Fairfield, Iowa
Lowell Shuttle Co., Tanner St., Lowell, Mass.
Lubriplate Div., Fiske Bro. Refining Co., 125 Lockwood St., Newark, N. J.
Lucey Boiler & Mfg. Co., 1514 Chestnut St., Chattanooga, Tenn.
LUDELL MFG. CO., 5200 W. State St., Milwaukee, Wis. ADV. PG. 53
Lunkenheimer Co., Beekman St. & Waverly Ave., Cincinnati 14, Ohio
Luxo Lamp Co., 102 Columbus Ave., Tuckahoe, N. Y.
Lydon Bros., 85 Zabriskie St., Hackensack, N. J.

Maguire & Co., J. P., 370 Fourth Ave., New York, N. Y.
Mackie & Sons Ltd., James, Belfast, Northern Ireland
Manhattan Rubber Div., Raybestos-Manhattan Rubber, Inc., Passaic, N. J.
M-B Products Co., 46 Victor Ave., Detroit 3, Mich.
Macbeth Corp., Box 950, Newburgh, N. Y.
Magnus Chemical Co., Inc., 180 South Ave., Garwood, N. J.
MAIN, INC., CHAS. T., 80 Federal St., Boston 10, Mass. ADV. PG. 190
Main & Sons, Robt. A., 275 Pascack Ave., Paramus, N. J.
Manheim Mfg. & Belting Co., Manheim, Pa.
Manning, Maxwell & Moore, Inc., 250 E. Main St., Stratford, Conn.
MAPLE FLOORING MFRS. ASSN., 35 E. Wacker Drive, Chicago 1, Ill. ADV. PG. 152
Markem Machine Co., 150 Congress St., Keene, N. H.

Marquette Div., Curtiss-Wright Corp., 1145 Galewood Drive, Cleveland 10, Ohio
MARSHALL & WILLIAMS CORP., 46 Baker St., Providence 5, R. I. ADV. PGS. 132-133
Martin & Sons, Adolph, 12 Linden St., Passaic, N. J.
Marvel Specialty Co., Paducah, Ky.
MASON-WORCESTER BRUSH CO., 38 Austin St., Worcester, Mass. ADV. PG. 161
Mason & Dixon Lines, Inc., Box 231, Kingsport, Tenn.
Mason-Neilan, Div. of Worthington Corp., Norwood, Mass.
Matthews Equipment Co., 93 Broadway, Providence, R. I.
Mathews Conveyor Co., Ellwood City, Pa.
McBride Co., Edw. J., Cottman Ave. & Wissinoming St., Philadelphia 35, Pa.
McCaskie, Inc., Wm., Forge Rd., Westport, Mass.
McCreary Machine Works, Inc., Cohoes, N. Y.
McDonough Power Equipment, Inc., McDonough, Ga.
McKIERNAN-TERRY CORP., Textile Machinery Div., Dover, N. J. ADV. PGS. 126-127
McLean Trucking Co., 617 Waughton St., Winston-Salem, N. C.
McQuay, Inc., 1600 Broadway, N. E., Minneapolis 13, Minn.
McPherson Co., Greenville, S. C.
Meadows Mfg. Co., Atlanta 10, Ga.
Medley Mfg. Co., 400 32nd St., Columbus, Ga.
Meese, Inc., Madison, Ind.
Meinhard & Co., Inc., 390 Fourth Ave., New York, N. Y.
Merrimack Card Clothing Co., Andover, Mass.
MERCURY CLUTCH DIV., AUTOMATIC STEEL PRODUCTS, 1201 Camden Ave., Canton 6, Ohio ADV. PG. 168
MERROW MACHINE CO., 2803 Laurel St., Hartford 6, Conn. ADV. PG. 134
Metallizing Engineering Co., Inc., 1101 Prospect Ave., Westbury, N. Y.
Metlon Corp., 432 Fourth Ave., New York 16, N. Y.
Metro-Atlantic, Inc., 2072 Smith St., Centerdale 11, R. I.
Michigan Oven Co., 423 Brainard St., Detroit, Mich.
Micro Switch Div., Minneapolis-Honeywell Regulator Co., Freeport, Ill.
Mill Devices Div., A. B. Carter, Inc., Gastonia, N. C.
Mill Factors Corp., 380 Fourth Ave., New York, N. Y.
Miller Corp., Harry, 4th & Bristol Sts., Philadelphia 40, Pa.
Mitler Wrapping & Sealing Machine Co., 18 S. Clinton, Chicago 6, Ill.
Milligan & Higgins Corp., 222 Front St., New York, N. Y.
Milprint, Inc., 4200 N. Holton St., Milwaukee 1, Wis.
MILTON MACHINE WORKS, Box 189, Milton, Pa. ADV. PG. 159
Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim, Philadelphia 40, Pa.
Minneapolis-Honeywell Regulator Co., 2747 4th Ave. S., Minneapolis 8, Minn.
Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul 6, Minn.
Minnesota Paints, Inc., 1101 Third Ave. S., Minneapolis 15, Minn.
MIRRO-ALUMINUM CO., Manitowoc, Wis. ADV. PG. 109
MITCHELL-BISSELL CO., Box 250, Trenton 2, N. J. ADV. PG. 77
MIXING EQUIPMENT CO., 179 Mt. Read Blvd., Rochester 11, N. Y. ADV. PG. 131
Moisture Register Co., 1510 W. Chestnut St., Alhambra, Calif.
Mona Industries, Inc., Box 1786, Paterson 17, N. J.
Monsanto Chemical Co., Organic Chemicals Div., 1724 S. Second St., St. Louis, Mo.
MONSANTO CHEMICAL CO., PLASTICS DIV., Springfield, Mass. ADV. PGS. 174, 175
Moretex Chemical Products, Inc., Box 2528, Spartanburg, S. C.
Morningstar-Paisley, Inc., 630 W. 51st St., New York 19, N. Y.
MORRIS FUR CO., Box 816, Burlington, N. C. ADV. PG. 169
Morris Textile Equipment Corp., 659 Berkeley Ave., Orange, N. J.
Morrison Machine Co., Paterson, N. J.
Morse Chain Co., Ithaca, N. Y.
Morton Salt Co., 110 N. Wacker Drive, Chicago 6, Ill.
Moto-Truc Co., 1953 E. 59th St., Cleveland 9, Ohio
MT. HOPE MACHINERY CO., 15 Fifth St., Taunton, Mass. ADV. PG. 105
Multi-Clean Products, Inc., 2277 Ford Parkway, St. Paul 1, Minn.

Nash Co., Inc., J. M., 2365 N. 30th St., Milwaukee 10, Wis.
Nashua Corp., 44 Franklin St., Nashua, N. H.
National Aniline Div., Allied Chemical Corp., 40 Rector St., New York 6, N. Y.
National Aniline Div., Textile Fibers, Allied Chemical Corp., 261 Madison Ave., New York 16, N. Y.
NATIONAL DRYING MACHINE CO., INC., N. E. Cor. Hancock St. & Lehigh Ave., Phila. 33, Pa. ADV. PG. 119
National Lead Co., 111 Broadway, New York 6, N. Y.
National Plastic Products Co., Odenton, Md.
National Plastics, Inc., Box 152, Knoxville, Tenn.
NATIONAL RING TRAVELER CO., Box 1028, Pawtucket, R. I. ADV. PG. 79
National Starch Products Inc., 750 Third Ave., New York 17, N. Y.
NATIONAL VULCANIZED FIBRE CO., Box 311, Wilmington 99, Del. ADV. PG. 156
Neptune Meter Co., 19 W. 50th St., New York, N. Y.
New Bedford Rayon Div., Mohasco Industries, Inc., 295 Fifth Ave., New York 16, N. Y.
NEW DEPARTURE DIV., GENERAL MOTORS CORP., Bristol, Conn. ADV. PG. 147
New England Bobbin & Shuttle Co., 31 Crown St., Nashua, N. H.
N. Y. & N. J. Lubricant Co., 292 Madison Ave., New York 17, N. Y.
Newport Industries Co., Div. Heyden Newport Chemical Co., 342 Madison Ave., New York, N. Y.
Nice Ball Bearing Co., 2925 Hunting Park Ave., Philadelphia 40, Pa.
NISSEN CO., JOHN P., JR., Box 888, Glenside, Pa. ADV. PG. 150
Nopco Chemical Co., First & Essex Sts., Harrison, N. J.
Norcross Corp., 247 Newtonville Ave., Newton 58, Mass.
Norgren Co., C. A., 3400 S. Elati St., Englewood, Colo.
Norris Bros., Greenville, S. C.
North, Inc., Frank G., Box 10573, Station "A", Atlanta, Ga.
North American Rayon Corp., 261 Fifth Ave., New York 16, N. Y.
NORTH WATERFORD SPOOL CO., Box "F", North Waterford, Me. ADV. PG. 158
Nutting Truck & Caster Co., Fairbault, Minn.
Nyanza Color & Chemical Co., Inc., 109 Worth St., New York, N. Y.

Oakite Products, Inc., 19 Rector St., New York 6, N. Y.
Ohio Falls, Inc., Box 566, Louisville 1, Ky.
Ohio Injector Co., Wadsworth, Ohio
Oilgear Co., 1577 W. Pierce St., Milwaukee 4, Wis.
Oil Rite Corp., 2318 Waldo Blvd., Manitowoc, Wis.
Olin-Mathieson Chemical Corp., Industrial Chemical Div., Mathieson Bldg., Baltimore 3, Md.
Onyx Oil & Chemical Co., Warren & Morris Sts., Jersey City 2, N. J.
ORDNANCE GAUGE CO., Ambler & Hagert Sts., Philadelphia 25, Pa. ADV. PGS. 82, 83
Oriented Plastics, Inc., Pembroke, N. H.
Orr Felt & Blanket Co., Piqua, Ohio
Orr & Sembower, Inc., Morgantown Rd., Reading, Pa.
Owens-Corning Fiberglas Corp., 598 Madison Ave., New York 22, N. Y.

P&N Machine Co., Div. Peterson & Neville, Inc., 365 Dorchester Ave., Boston 27, Mass.
Pabst Brewing Co., Merchandise Mart, Chicago 54, Ill.
Package Products Co., Inc., 1930 Camden Rd., Charlotte, N. C.
Paddock Co., J. C., Box 275, Spartanburg, S. C.
Page Steel & Wire Div., American Chain & Cable Co., Monessen, Pa.
Pako Corp., 1010 Lyndale Ave., N., Minneapolis 11, Minn.
Paramount Oilless Bearing Co., 101 Hope Ave., Worcester, Mass.
PARKS CO., M. H., 30 Brown St., Winchendon, Mass. ADV. PG. 166
Parks-Cramer Co., Fitchburg, Mass.
Parrott & Ballentine, 610 S. Carolina National Bank Bldg., Greenville, S. C.
Peerless Color Co., Inc., 535 North Ave., Plainfield, N. J.
Peerless Pump Div., Food Machinery & Chemical Corp., 301 West Ave., Los Angeles 31, Calif.
Penick & Ford, Ltd., 420 Lexington Ave., New York 17, N. Y.
Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.
PERFECTING SERVICE CO., 332 Atando Ave., Charlotte, N. C. ADV. PG. 129
PERKINS & SON, INC., B. F., Holyoke, Mass. ADV. PG. 110
Permacel Tape Corp., New Brunswick, N. J.
Permutit Co., Div. Pfaudler Permutit, Inc., 50 West 44th St., New York 36, N. Y.
Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill.
Pfaudler Co., Div. Pfaudler Permutit, Inc., 1000 West Ave., Rochester 3, N. Y.
Pfister Chemical Works, Ridgefield, N. J.
Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.
Piedmont Canteen Service, Box 1581, Greensboro, N. C.
Pioneer Salt Co., 910 N. Delaware Ave., Philadelphia 23, Pa.
Pittsburgh Coke & Chemical Co., Industrial Chemicals Div., Box 1645, Pittsburgh 30, Pa.
Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh, Pa.
Pittsburgh Plate Glass Co., Fiber Glass Div., One Gateway Center, Pittsburgh 22, Pa.
Plastic Industries, Athens, Tenn.
PLASTIC MOLD & ENGINEERING CO., 158 Clifford St., Providence 3, R. I. ADV. PGS. 160, 161
PLATT BROS. (SALES) LTD.—Rep. by Atkinson, Haserick & Co., Box 509, Framingham, Mass. ADV. PG. 63
Pneumafil Corp., Charlotte 8, N. C.
Poliafil, Inc., Scranton, Pa.
POLYMER INDUSTRIES, Springdale, Conn. ADV. PG. 184
POLYMER SOUTHERN, INC., Box 2184, Greenville, S. C. ADV. PG. 184
Polymers, Inc., Middlebury, Vt.
Portland Co., 28 Fore St., Portland 6, Me.
Portland Copper & Tank Works, 80 Second St., South Portland, Me.
Potts Co., Horace T., Speedline Fittings Div., Erie Ave. & D Sts., Philadelphia 34, Pa.
Powell Co., Wm., 2525 Spring Grove, Cincinnati 22, Ohio
Powers Regulator Co., 3400 Oakton St., Skokie 18, Ill.
Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia, Pa.
Procter & Gamble Co., Industrial Specialty Sales Dept., Box 599, Cincinnati, Ohio
PROCTOR & SCHWARTZ, INC., 7th & Tabor Rd., Philadelphia 20, Pa. ADV. PG. 104
Progressive Engineering, Inc., 241 W. Water St., Rockland, Mass.
Putnam Chemical Corp., Beacon, N. Y.
Pure Oil Co., 35 E. Wacker Drive, Chicago 1, Ill.
Pyrometer Instrument Co., Bergenfield, N. J.

Quaker Chemical Products, Conshohocken, Pa.
Queens Machine Corp., 280 Starr St., Brooklyn 34, N. Y.

RAGAN RING CO., 901 S. Main St., East Point, Ga. ADV. PG. 130
Randall Graphite Bearings, Inc., Lima, Ohio
Raymond Corp., 141 Madison Ave., Greene, N. Y.
Redman Associates, Inc., P. O. Drawer 1820, High Point, N. C.
Red-Ray Mfg. Co., 318 Cliff Lane, Cliffside, N. J.
Reeves Bros., Inc., 54 Worth St., New York 13, N. Y.
Reeves Pulley Co., Columbus, Ind.
Refined Products Corp., 624 Schuyler Ave., Lyndhurst, N. J.
Reichhold Chemicals, Inc., 525 North Broadway, White Plains, N. Y.
REINER, INC., ROBT., 550-64 Gregory Ave., Weehawken, N. J. ADV. PG. 145
Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown 1, Ohio
Republic Steel Corp., 1441 Republic Bldg., Cleveland 1, Ohio
Reynolds Metals Co., 3rd & Grace Sts., Richmond, Va.
Rhoads & Sons, J. E., 2100 W. 11th St., Wilmington 99, Delaware
Rice Barton Corp., 65 Taintor St., Worcester 1, Mass.
Richards-Wilcox Mfg. Co., Aurora, Ill.
Richardson Co., 2698 Lake St., Melrose Park, Ill.
Richmond Oil Soap & Chemical Co., 1041 Frankford Ave., Philadelphia 25, Pa.
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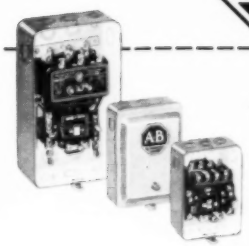

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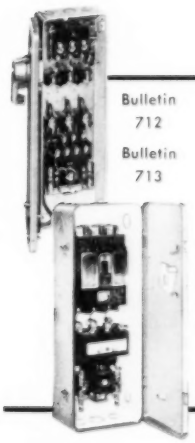
For Manual Across-the-Line Starting

BULLETIN 1209

Bulletin 1209 starting switch has a toggle action designed to meet the special requirements of loom motor operations. The unique knob operator requires deliberate action to actuate the mechanism. Enclosure prevents entrance of lint or escape of sparks to reduce fire hazard. Cast iron pedestals are optional.



Bulletin 712

Bulletin 713

Starter with Disconnect Switch or Circuit Breaker

BULLETIN 712-713

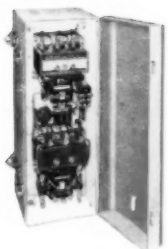
Designed for "safety"—the Bulletin 712 has a manual disconnect switch and solenoid starter in a single enclosure. The cabinet door cannot be opened while the switch is "hot."

Bulletin 713, with I.T.E. circuit breaker, has same safety features. Both use A-B Bulletin 709 starters. Neater installation than the separate units—and costs no more.

For Starting and Two-Speed Operation

BULLETIN 715

Bulletin 715 multispeed starters are designed for automatic control of two, three, and four speed squirrel cage motors of either the consequent pole or separate winding types. The solenoid contactors have maintenance free, double break, silver alloy contacts, and accurate overload relays.



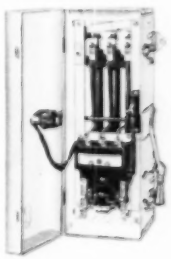
For Automatic Velvet Smooth Starting

BULLETIN 740

Graphite disc resistors are automatically inserted in series with motor during starting. Resistors and starting period can be adjusted to motor and load conditions for velvet smooth acceleration. Accurate thermal relays protect the motor against overload under all conditions.

For Velvet Smooth Stepless Starting

BULLETIN 640



Graphite compression disc resistors provide smooth, stepless starting of polyphase squirrel cage motors. Operated by hand lever, the smooth starting of the motor and machine is under the control of the operator at all times. Accurate thermal overload relays protect the motor.

ALLEN-BRADLEY

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